

# EXHIBIT 1

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

HONEYWELL INTERNATIONAL INC.  
and HONEYWELL INTELLECTUAL  
PROPERTIES INC.

Plaintiffs,

v.

HAMILTON SUNDSTRAND CORP.,

Defendant.

**C.A. No. 99-309-GMS**

**FINAL PRETRIAL ORDER  
EXHIBIT 1**

**THE PARTIES' STIPULATION OF UNCONTESTED FACTS**

1. Honeywell International Inc. ("Honeywell") is a corporation organized and existing under the laws of Delaware with its principal place of business at 101 Columbia Road, Morristown, New Jersey. Honeywell is the successor-in-interest to a corporation known as Allied Signal Inc., which was also a Delaware corporation headquartered in Morristown, New Jersey.

2. Honeywell Intellectual Properties Inc. ("HIPI") is a corporation organized and existing under the laws of Arizona with its principal place of business at 960 W. Elliott Road, Suite 101, Tempe, Arizona.

3. Hamilton Sundstrand Corporation ("HSC") is a corporation organized and existing under the laws of Delaware with its principal place of business at One Hamilton Road, Windsor Locks, Connecticut. HSC's power systems business, which is responsible for its

auxiliary power units, is based in San Diego, California. HSC is a wholly-owned subsidiary of United Technologies Corporation.

4. United States Patent No. 4,380,893, entitled “Compressor Bleed Air Control Apparatus and Method,” (the “‘893 patent”) was issued on April 26, 1983.

5. United States Patent No. 4,428,194, entitled “Compressor Bleed Air Control Apparatus and Methods,” (the “‘194 patent”) was issued on January 31, 1984.

6. At the trial in this case in February 2001, three independent claims were at issue: independent claim 4 of the ‘194 patent and independent claims 8 and 19 of the ‘893 patent.

7. According to the Federal Circuit opinion in this case, the relevant amendments to the patent applications took place on October 25, 1982 (as to the ‘893 patent) and August 30, 1983 (as to the ‘194 patent).

8. The APS 3200 APU is a gas turbine engine auxiliary power unit (“APU”) manufactured, used, sold and offered for sale by HSC.

9. In a verdict form dated February 16, 2001, the jury found that the APS 3200 APU did not literally infringe any claims of the ‘194 or ‘893 patents, but infringed claim 4 of the ‘194 patent and claims 8 and 19 of the ‘893 patent under the doctrine of equivalents.

10. The Court entered judgment in Honeywell’s favor on February 20, 2001.

# EXHIBIT 2

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

HONEYWELL INTERNATIONAL INC.  
and HONEYWELL INTELLECTUAL  
PROPERTIES INC.

Plaintiffs,

v.

HAMILTON SUNDSTRAND CORP.,

Defendant.

**C.A. No. 99-309-GMS**

**FINAL PRETRIAL ORDER  
EXHIBIT 2**

**HONEYWELL'S STATEMENT OF CONTESTED ISSUES OF FACT**

To the extent that any issue of law is deemed to be an issue of fact, it should be so considered, and to the extent that any issue of fact is deemed to be an issue of law it should be so considered.

1. None of the prior art references raised during prosecution of the patents-in-suit suggested or disclosed the equivalent.
2. In rewriting application claim 17 from dependent to independent form, Honeywell effectively added to the elements of original independent claim 16 four limitations, each of which had been found in original application claim 17: 1) a flow-related parameter whose value is "substantially independent of the temperature of the compressed air;" 2) a comparator means having an "adjustable control set point representing said desired value of said parameter;" and 3) a "reset signal for varying said set point as a function of the position of said inlet guide vanes" 4) "in accordance with a predetermined reset schedule."

3. In amending original application claim 35 and rewriting it from dependent to independent form, Honeywell effectively added to the elements of independent claim 32 four limitations, each of which had been found in original application claim 35: 1) “a guide vane position sensor;” and 2) “a function generator;” 3) “coupled in series;” 4) “between the inlet guide vanes and said input portion of said comparator.”

4. In amending original application claim 51 and rewriting it from dependent to independent form, Honeywell added two elements to the limitations that had been found in original independent application claim 48: 1) “adjustable inlet guide vanes;” and 2) a control system that “adjust[s] the relationship between the magnitudes of said integral and proportional control signals and the magnitudes of said parameter variations as a function of the position of the inlet guide vanes.”

5. After rewriting the dependent application claims as independent claims the rewritten claims then issued without further examination. Specifically, application claims 17 and 35 issued as claims 8 and 19 of the ‘893 patent on April 26, 1983, and application claim 51 issued as claim 4 of the ‘194 patent on January 31, 1984.

6. Inlet guide vane position was never mentioned at any point in the prosecution history, either by the Examiner or by Honeywell.

7. The amendments to the claims at issue were made to overcome prior art that did not include inlet guide vane position. Instead, the prior art being avoided concerned a flow-related parameter subjected to proportional and integral control while the added limitations included a reference to inlet guide vane position.

8. The rationale underlying the amendments -- to overcome a rejection based on art that contained a flow-related parameter subjected to proportional and integral control -- had nothing to do with the Sundstrand equivalent APS 3200 surge control system that used inlet guide vane position.

9. While other conventional surge control systems include sensors that detect total pressures, the control logic of the APS 3200 uses only static pressure sensors to determine its flow related parameter, a parameter denoted "DELPQP" by Sundstrand.

10. DELPQP constitutes a unique measure of potential surge conditions within a centrifugal compressor, a measure not described elsewhere in patents or prior art.

11. Sundstrand did not start developing the APS 3200 surge control system until 1989, long after the prosecution of the Honeywell patents had been completed.

12. It took Sundstrand nearly four years of failed experimental and development efforts to address and resolve the problems created by the behavior of the DELPQP variable.

13. Sundstrand's infringing APS 3200 surge system represented later-developed technology that was not known in the relevant art in 1982-83.

14. There is no evidence of any surge control system in existence in 1982-83 that -- as the infringing APS 3200 did over a decade later -- measured inlet guide vane position in order to compensate for a flow-related parameter that could indicate multiple levels of flow for a given value of the parameter.

15. In June 2004, the *en banc* Federal Circuit held for the first time that Honeywell's act of rewriting the dependent claims in independent form, when combined with its cancellation of the antecedent independent claims, constituted a narrowing amendment and therefore gave rise to a presumptive surrender of equivalents by virtue of prosecution history estoppel. *Honeywell Int'l Inc. v. Hamilton Sundstrand Corp.*, 370 F.3d 1131, 1134 (Fed. Cir. 2004) (*en banc*), *cert. denied*, 125 S.Ct. 2928 (June 20, 2005) (No. 04-293).

16. A reasonable patent practitioner in 1982-83 would not have believed that he had surrendered coverage of equivalents to inlet guide vane position use during prosecution of the '893 and '194 patents.

17. A reasonable patent attorney in 1982-83 would have believed that the APS 3200 surge control system (had they known about that later-developed system at the time of the patent prosecution) was literally covered by claim 4 of the '194 patent.

Honeywell herein incorporates by reference all issues of fact set forth in its Proposed Findings of Fact and Conclusions of Law that are not specifically set forth in this Statement of Contested Issues of Fact.



# EXHIBIT 3

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

HONEYWELL INTERNATIONAL INC.  
and HONEYWELL INTELLECTUAL  
PROPERTIES INC.

Plaintiffs,

v.

HAMILTON SUNDSTRAND CORP.,

Defendant.

**C.A. No. 99-309-GMS**

**FINAL PRETRIAL ORDER  
EXHIBIT 3**

**HSC'S STATEMENT OF CONTESTED ISSUES OF FACT**

To the extent that any issue of fact is deemed to be an issue of law it should be so considered, and to the extent that any issue of law is deemed to be an issue of fact it should be so considered. In addition, not all of the issues of fact listed below are necessarily required to find for Hamilton Sundstrand Corp. ("HSC"). HSC includes below factual issues that are responsive to Honeywell's theory of the case, but which HSC does not agree need to be resolved for a finding in its favor.<sup>1</sup>

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<sup>1</sup> To the extent that Honeywell raises new arguments in its Reply to HSC's Trial Brief regarding any of the *Festo* issues on which Honeywell bears the burden at trial, additional contested issues of fact may arise.

## **I. PROSECUTION HISTORY OF THE ‘893 AND ‘194 PATENTS**

1. U.S. Patent Application 235,794 issued as the ‘893 patent. Application No. 424,674, which issued as the ‘194 patent, was a divisional application from 235,794 and contained the original application method claims.

2. Original application claims 16, 32 and 49 in U.S. Patent Application 235,794 did not make any reference to reliance upon inlet guide vane position.

3. The Patent and Trademark Office (“PTO”) Examiner rejected original application claims 16, 32 and 49 based upon prior art.

4. Original application claim 17 was dependent upon application claim 16. Original application claim 35 was dependent upon application claim 32. Original application claim 51 was dependent upon application claim 49.

5. The Examiner stated that dependent claims 17, 35 and 51 would be allowed over the prior art if rewritten in independent form.

6. On October 25, 1982, in response to the Examiner’s office action, Honeywell amended application claims 17 and 35, rewriting them into independent form, canceling the original independent claims on which they previously depended and “effectively adding the inlet guide vane limitation to the claimed invention.” *Honeywell Int’l Inc. v. Hamilton Sundstrand Corp.*, 370 F.3d 1131, 1141 (Fed. Cir. 2004).

7. On August 30, 1983, in response to the Examiner’s office action, Honeywell amended application claim 51, rewriting it into independent form, canceling the original independent claim on which it previously depended and “effectively adding the inlet guide vane limitation to the claimed invention.” *Id.*

8. The inlet guide vane limitation was at issue during the prosecution of the patents-in-suit and Honeywell relied on the addition of the inlet guide vane limitation to distinguish the prior art.

9. On April 26, 1983, application claims 17 and 35 issued without further amendment as claims 8 and 19 of the '893 patent.

10. On January 31, 1984, application claim 51 issued without further amendment as claim 4 of the '194 patent.

## **II. THE APS 3200 APU**

11. The APS 3200 APU incorporated inlet guide vane position into a surge control system.

12. Whether HSC discerned that IGV position could be used to resolve the double-solution problem within a short time of discovering the problem.

13. Whether DELPQP in the APS 3200 is one example of a  $\Delta P/P$  parameter.

## **III. THE PRIOR ART<sup>2</sup>**

14. Whether the prior art disclosed the incorporation of inlet guide vane position into a surge control system for a compressor.

15. Whether the prior art disclosed the use of a flow-related parameter (e.g.,  $\Delta P/P$ ) in a compressor that was a direct function of inlet guide vane position.

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<sup>2</sup> Honeywell's characterization of the equivalent to the inlet guide vane limitation during the remand proceeding is fundamentally different from the description of the APS 3200 surge control system on which Honeywell relied as the equivalent to the inlet guide vane limitation in order to obtain the jury finding of infringement under the doctrine of equivalents. If Honeywell is permitted to change its characterization of the equivalent during remand, and argue a different characterization of the equivalent, certain of the following additional disputed issues of fact may be relevant, and HSC will present additional evidence to establish that Honeywell's current characterization of the equivalent to the inlet guide vane limitation was foreseeable as of 1982/1983. If Honeywell is not allowed to change its position, some of the following factual issues may not be relevant.

16. Whether the prior art disclosed using inlet guide vane position to determine whether and how to use the  $\Delta P/P$  flow parameter in operation of the surge control valve.

17. Whether the prior art disclosed a flow-related parameter based upon measurements of static pressure within the diffuser of a compressor.

18. Whether the prior art disclosed use of  $\Delta P/P$  based upon measurements of pressure in the diffuser as a flow-related parameter.

19. Whether the prior art disclosed that use of a flow-parameter based upon a static pressure measurement in the diffuser and another static pressure measurement downstream of the first measurement in either the diffuser outlet or compressor discharge duct would encounter a “double solution” or “inverted-V” curve at supersonic flows.

20. Whether the prior art disclosed the resolution of the “inverted-V” or “double solution” problem by overriding the compressor surge control system.

HSC incorporates by reference all issues of fact set forth in its Proposed Findings of Fact and Conclusions of Law that are not specifically set forth in this Statement of Contested Issues of Fact.

# EXHIBIT 4

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

HONEYWELL INTERNATIONAL INC.  
and HONEYWELL INTELLECTUAL  
PROPERTIES INC.

Plaintiffs,

v.

HAMILTON SUNDSTRAND CORP.,

Defendant.

**C.A. No. 99-309-GMS**

**FINAL PRETRIAL ORDER  
EXHIBIT 4**

**HONEYWELL’S STATEMENT OF CONTESTED ISSUES OF LAW**

To the extent that any issue of law is deemed to be an issue of fact, it should be so considered, and to the extent that any issue of fact is deemed to be an issue of law it should be so considered.

1. The Supreme Court has explained that the overall focus in determining whether a patent-holder has rebutted the *Festo* presumption is whether the narrowing amendment “surrender[ed] the particular equivalent in question.” *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 740 (2002).

2. The Court identified three alternative ways by which a patentee can rebut the presumption of prosecution history estoppel: (1) by proving that “the rationale underlying the amendment [bears] no more than a tangential relation to the equivalent in question;” (2) by proving that the equivalent was “unforeseeable” at the time of the amendment; or (3) by proving

that there is “‘some other reason’ suggesting that the patentee could not reasonably have been expected to have described the alleged equivalent.” *Id.* at 740-41.

3. Honeywell can rebut the presumption under any one of the three criteria announced by the Supreme Court in *Festo* by a preponderance of the evidence. *Cordis Corp. v. Medtronic Ave., Inc.*, 336 F. Supp. 2d 363, 367 (D. Del. 2004).

4. The question whether the presumption is rebutted is one of law to be determined by the court. *Festo*, 344 F.3d 1359, 1367 (Fed. Cir. 2003) (*en banc*). For any factual determinations informing that question of law, the district court acts as the finder of fact. *Id.* at 1368 n.3.

5. The “tangential relation” prong of the *Festo* rebuttal test concerns whether “the rationale underlying the amendment [ ] bear[s] no more than a tangential relation to the equivalent in question.” *Festo*, 535 U.S. at 740.

6. The foreseeability “criterion presents an objective inquiry, asking whether the alleged equivalent would have been unforeseeable to one of ordinary skill in the art at the time of the amendment.” *Festo*, 344 F.3d at 1369 (citation omitted).

7. A patent owner can successfully rebut the *Festo* presumption by establishing that some “other reason” exists why it could not reasonably be expected to have described literally in the patent application the equivalent used by Sundstrand. *Festo*, 535 U.S. at 741.

8. A patent owner can successfully rebut the *Festo* presumption under the “other reasons” criteria by establishing “that the drafter of the amendment in question -- and



those skilled in the art -- interpreted the amendment to cover” the equivalent. *Amgen, Inc. v. Hoechst Marion Roussel, Inc.*, 287 F. Supp. 2d 126, 157 (D. Mass. 2003).

9. When a case is found to be exceptional, the prevailing party may be awarded attorneys’ fees. 35 U.S.C. § 285.

Honeywell herein incorporates by reference all issues of law set forth in its Proposed Findings of Fact and Conclusions of Law that are not specifically set forth in this Statement of Contested Issues of Law.

# EXHIBIT 5

**HONEYWELL v. HSC**  
**FINAL PRE-TRIAL ORDER EXHIBIT 5**

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

**HONEYWELL INTERNATIONAL INC. and  
HONEYWELL INTELLECTUAL  
PROPERTIES INC.,**

**Plaintiffs,**

**V.**

**HAMILTON SUNDSTRAND CORP.,**

**Defendant.**

**Civil Action No. 99-309-GMS**

## Exhibit 5

## HSC'S STATEMENT OF CONTESTED ISSUES OF LAW

To the extent that any issue of law is deemed to be an issue of fact, it should be so considered, and to the extent that any issue of fact is deemed to be an issue of law it should be so considered.

## I. THE EQUIVALENT TO THE INLET GUIDE VANE LIMITATION

1. The Supreme Court set forth three ways by which a patentee can overcome the *Festo* presumption:

- (1) where the equivalent was “unforeseeable” at the time of the narrowing amendment;
- (2) where the rationale underlying the amendment bears “no more than a tangential relation” to the equivalent in question; or
- (3) where there is some “other reason” suggesting that the patentee could not reasonably be expected to have described the equivalent in question.

*Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 740-41 (2002).

2. What is the “equivalent” to the inlet guide vane limitation on which Honeywell relied to obtain the jury’s verdict that the APS 3200 infringed the asserted independent claims of the patents-in-suit under the doctrine of equivalents.

3. Whether Honeywell is estopped from arguing for an “equivalent” to the inlet guide vane limitation that is different from the “equivalent” that it argued to the jury in order to obtain a verdict of infringement under the doctrine of equivalents.

## **II. THE FESTO PRESUMPTION**

4. Whether Honeywell can overcome the presumption that it surrendered all equivalents when it amended the asserted claims.

5. Whether, as a matter of law, Honeywell can establish that at the time it amended its application claims to add the inlet guide vane limitation “one skilled in the art could not reasonably be expected to have drafted a claim that would have literally encompassed the alleged equivalent.” *Festo*, 535 U.S. at 741.

## **III. FORESEEABILITY**

6. Whether, as a matter of law, Honeywell can establish that the alleged equivalent would have been unforeseeable to one of ordinary skill in the art at the time Honeywell amended its claims to gain allowance. *Id.*; *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 344 F.3d 1359, 1369-70 (Fed. Cir. 2003).

7. The courts may consider extrinsic evidence – i.e. evidence outside the prosecution history – in determining whether the equivalent was foreseeable to a person of ordinary skill in the art. *Festo*, 344 F.3d at 1369; *Glaxo Wellcome, Inc. v. Impax Laboratories, Inc.*, 356 F.3d 1348, 1355-56 (Fed. Cir. 2004); *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 75 U.S.P.Q.2d 1830 (D. Mass. 2005).

#### **IV. TANGENTIAL RELATIONSHIP**

8. Whether, as a matter of law, Honeywell can establish that the rationale underlying the amendment made to each asserted claim bore no more than a tangential relation to the alleged equivalent. *Id.*

9. Although “an amendment made to avoid prior art that contains the equivalent in question is not tangential,” *Festo*, 344 F.3d at 1369, “[i]t does not follow ... that equivalents not within the prior art must be tangential to the amendment.” *Chimie v. PPG Industries Inc.*, 402 F.3d 1371, 1383 (Fed. Cir. 2005).

#### **V. “SOME OTHER REASON”**

10. Whether, as a matter of law, Honeywell can establish that there was “some other reason” that it could not reasonably have been expected to have drafted a claim that would have literally covered the alleged equivalent at the time it narrowed the asserted claims. *Id.*

11. A patentee’s purported belief at the time of the amendment that the claims would have literally covered the alleged equivalent is not “another reason” on which a patentee can rely to overcome the *Festo* presumption of estoppel. *Biagro Western Sales, Inc. v. Grow More, Inc.*, 423 F.3d 1296, 1307 (Fed. Cir. 2005).

12. A patentee’s belief at the time of amendment as to the applicability of the doctrine of prosecution history estoppel is not “another reason” on which a patentee can rely to overcome the *Festo* presumption of estoppel, as *Festo* applies retroactively “to all granted patents and to all pending litigation that has not been concluded with a final judgment including appeals.” *Festo*, 344 F3d at 1370 n.4.

HSC incorporates by reference all issues of law set forth in its Proposed Findings of Fact and Conclusions of Law that are not specifically set forth in this Statement of Contested Issues of Law.

# EXHIBIT 6

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

HONEYWELL INTERNATIONAL INC. and  
HONEYWELL INTELLECTUAL PROPERTIES INC.,

Plaintiffs,

v.

HAMILTON SUNDSTRAND CORPORATION,

Defendant.

Case No.: 99-309 (GMS)

**FINAL PRETRIAL ORDER  
EXHIBIT 6**

**HONEYWELL'S LIST OF EXHIBITS**

Honeywell's list of exhibits follows on AO Form 187.



# United States District Court

## DISTRICT OF DELAWARE

### EXHIBIT AND WITNESS LIST

Honeywell International Inc. and  
Honeywell Intellectual Properties Inc.  
v. Hamilton Sundstrand Corporation

**CASE NUMBER: 99-309-GMS**

PRESIDING JUDGE <b>Gregory M. Sleet</b>				PLAINTIFF'S ATTORNEY <b>Thomas C. Grimm</b>		DEFENDANT'S ATTORNEY <b>Richard D. Kirk</b>	
TRIAL DATE(S) <b>March 23, 2006</b>				COURT REPORTER		COURTROOM DEPUTY	
PLF. NO.	DEF. NO.	DATE OFFER ED	MARKED	ADMITTED	DATE OF DOC.	DESCRIPTION OF EXHIBITS AND WITNESSES	
PTX 1001.					1/31/84	United States Patent No. 4,428,194 AS 198995 - 199005	
PTX 1002.					4/26/83	United States Patent No. 4,380,893 AS 198898 - 198907	
PTX 1003.						File History for the United States Patent No. 4,428,194 HSB 401518 - 82	
PTX 1004.						File History for the United States Patent No. 4,380,893 HSB 401406 - 84	
PTX 1005.					3/19/68	United States Patent No. 3,373,675 RMD AS 000104 - 108	
PTX 1006.					11/19/68	United States Patent No. 3,411,702 RMD AS 000109 - 113	
PTX 1007.					8/1/61	United States Patent No. 2,994,471 RMD AS 000114 - 116	
PTX 1008.					10/22/74	United States Patent No. 3,842,720 RMD AS 000117 - 121	
PTX 1009.					4/24/73	United States Patent No. 3,728,955 RMD AS 000122 - 130	
PTX 1010.					12/19/72	United States Patent No. 3,706,270 RMD AS 000131 - 134	
PTX 1011.					4/29/69	United States Patent No. 3,441,045 RMD AS 000135 - 139	
PTX 1012.					1/23/68	United States Patent No. 3,364,837 RMD AS 000140 - 146	
PTX 1013.					1/9/68	United States Patent No. 3,362,626 RMD AS 000147 - 149	
PTX 1014.					9/28/15	United States Patent No. 1,154,959 RMD AS 000160 - 163	
PTX 1015.					2/4/13	United States Patent No. 1,052,172 RMD AS 000164 - 166	
PTX 1016.					10/84	Patent Procurement RMD AS 000001 - 44	

PLF. NO.	DEF. NO.	DATE OFFER ED	MARKED	ADMITTED	DATE OF DOC.	DESCRIPTION OF EXHIBITS AND WITNESSES
PTX 1017.						Employees' Guide To Patents and Inventions RMD AS 000050 - 63
PTX 1018.					8/3/00	Declaration of Peter J. Suttie
PTX 1019.					7/17/00	Hamilton Sundstrand's Response to Plaintiffs' First Set of Requests of Admission
PTX 1020.					10/30/00	Hamilton Sundstrand's Response to Honeywell's Second Set of Requests for Admission
PTX 1021.					10/11/05	Hamilton Sundstrand's Response to Plaintiffs' First Set of Requests for Admission (Remand)
PTX 1022.					10/31/05	Defendant Hamilton Sundstrand Corporation's Objections and Responses to Plaintiff's second Set of Requests for Admission
PTX 1023.					12/9/05	Hamilton Sundstrand's Response to Plaintiffs' Third Set of Requests for Admission
PTX 1024.					12/10/99	Hamilton Sundstrand's Response to Plaintiffs' First Set of Interrogatories
PTX 1025.					4/3/00	Hamilton Sundstrand's Response to Plaintiffs' Second Set of Interrogatories
PTX 1026.					4/19/00	Hamilton Sundstrand's Supplemental Response to Plaintiffs' Interrogatories Nos. 1 and 2
PTX 1027.					5/15/00	Hamilton Sundstrand's Supplemental Response to Plaintiffs' Interrogatories 3 and 4
PTX 1028.					7/12/00	Hamilton Sundstrand's Second Supplemental Response to Plaintiffs' Interrogatory No. 1
PTX 1029.					7/12/00	Hamilton Sundstrand's Second Supplemental Response to Plaintiffs' Interrogatories Nos. 3 and 4
PTX 1030.					10/25/00	Hamilton Sundstrand's Response to Honeywell's Interrogatory Concerning Surge Control Devices
PTX 1031.					11/14/00	Hamilton Sundstrand's Responses to Honeywell's Fourth Set of Interrogatories
PTX 1032.					11/29/00	Hamilton Sundstrand's First Supplemental Response to Honeywell's Interrogatory No. 22
PTX 1033.					12/22/00	Hamilton Sundstrand's First Supplemental Response to Honeywell's Interrogatory No. 19 & 23 and Second Supplemental Response to Honeywell's Interrogatory No. 22
PTX 1034.					10/11/05	Hamilton Sundstrand's Response to Plaintiffs' First Set of Interrogatories

PLF. NO.	DEF. NO.	DATE OFFER ED	MARKED	ADMITTED	DATE OF DOC.	DESCRIPTION OF EXHIBITS AND WITNESSES
PTX 1035.					10/31/05	Defendant Hamilton Sundstrand Corporation's Objections and Responses to Plaintiffs' Second Set of Interrogatories
PTX 1036.					11/14/05	Defendant Hamilton Sundstrand Corporation's Objections and Responses to Plaintiffs' Third Set of Interrogatories
PTX 1037.					11/23/05	Defendant Hamilton Sundstrand Corporation's Objections and First Supplemental Responses to Plaintiffs' Interrogatory Nos. 5, 6 and 8
PTX 1038.					12/9/05	Hamilton Sundstrand's Response to Plaintiffs' Fourth Set of Interrogatories
PTX 1039.					12/9/05	Hamilton Sundstrand's First Supplemental Response to Plaintiffs' Interrogatory No. 2 and Second Supplemental Response to Interrogatory No. 5
PTX 1040.					1/25/06	Hamilton Sundstrand's Objections and Supplemental Responses to Plaintiffs' First Set of Interrogatories Nos. 2, 3, 4, 8 and 9
PTX 1041.					11/12/92	Sundstrand Power Systems Fax re: Surge Control HSA 161464 - 476
PTX 1042.					9/92	Fradin, Christian, "Detailed Measurements of the Flow Field in Vaneless and Vaned Diffusers of Centrifugal Compressors RMD AS 000308 - 325
PTX 1043.						<a href="http://www.sussex.ac.uk/Units/tfmrc/Research/r_cencom.htm">http://www.sussex.ac.uk/Units/tfmrc/Research/r_cencom.htm</a> RMD AS 000204 - 206
PTX 1044.					2002	Krain, Hartmut, "Unsteady Diffuser Flow in a Transonic Centrifugal Compressor," International Journal of Rotating Machinery RMD AS 000283 - 291
PTX 1045.					6/06/05	Dubitsky, O., and Japikse, D., "Vaneless Diffuser Advanced Model" RMD AS 000296 - 307
PTX 1046.					4/22/88	Memorandum To: Bernard Macarez, From: Ed Goff, Re: GTCP331-350 Load Compressor Static Pressure Pickup for Surge Control AS 004756 - 57
PTX 1047.						<a href="http://www.omega.com/literature/transactions/volume4/T9904-060FLOW.html">http://www.omega.com/literature/transactions/volume4/T9904-060FLOW.html</a> RMD AS 000326 - 36
PTX 1048.						TS-160 Compressor Surge Control RMD AS 000339 - 40
PTX 1049.					8/19/97	Carter, Don, "Key Controls Upgrade for Critical Hydrogen Recycle Unit RMD AS 000341 - 51

PLF. NO.	DEF. NO.	DATE OFFERED	MARKED	ADMITTED	DATE OF DOC.	DESCRIPTION OF EXHIBITS AND WITNESSES
PTX 1050.						<a href="http://www.miconsystems.com/papers/centrif.htm">http://www.miconsystems.com/papers/centrif.htm</a> RMD AS 000352 - 74
PTX 1051.						DeltaV, Compressor Anti-Surge Control Application - Whitepaper RMD AS 000375 - 83
PTX 1052.						<a href="http://efunda.com/formulae/fluids/venturi_flowmeter.cfm">http://efunda.com/formulae/fluids/venturi_flowmeter.cfm</a> RMD AS 000384 - 86
PTX 1053.					9/47	Brown, W.B., and Bradshaw, G.R., National Advisory Committee for Aeronautics, "Method of Designing Vaneless Diffusers and Experimental Investigation of Certain Undetermined Parameters RMD AS 000389 - 426
PTX 1054.						<a href="http://www.ist.rwth-aachen.de/enforschung/laufgrad.html">http://www.ist.rwth-aachen.de/enforschung/laufgrad.html</a> RMD AS 000427 - 28
PTX 1055.						Liu, Z. and Hill, D.L., "Issues surrounding Multiple Frames of Reference Models for Turbo Compressor Applications RMD AS 000429 - 37
PTX 1056.					7/00	Abidogun, K.B., and Ahmed, S.A., "Detailed Experimental Measurements of Flowfield Characteristics in a Radial Vaneless Diffuser" RMD AS 000196 - 203
PTX 1057.						Sorokes, J.M., Borer, C.J., and Koch, J.M., "Investigation of the Circumferential Static Pressure Non-Uniformity Caused by a Centrifugal Compressor Discharge Volute" RMD AS 000173 - 86
PTX 1058.					12/80	Yoshinaga, Y., Gyobu, I., Mishina, H., Koseki, F., Nishida, H., "Aerodynamic Performance of a Centrifugal Compressor with Vaned Diffusers" SUND 005818 - 20
PTX 1059.					12/5/94	APS3200 Bleed System, Ed Edelman (Edelman Ex. 71) HSA 226735 - 76
PTX 1060.					2/4/93	Software Problem Report (Edelman Ex. 67) HSB 110069 - 103
PTX 1061.					5/27/93	Coordination Memo re: B-Factor Control Logic Problems (Edelman Ex. 62) HSB 035443 - 52
PTX 1062.					3/2/93	Coordination Memo re: Load Compressor Control (Suttie Ex. 43) HSA 152238 - 44

PLF. NO.	DEF. NO.	DATE OFFER ED	MARKED	ADMITTED	DATE OF DOC.	DESCRIPTION OF EXHIBITS AND WITNESSES
PTX 1063.					7/2/91	Engineering Specification APS3200 ECB Requirements Specifications (Suttie Ex. 9) HSA 96782 - 965
PTX 1064.					10/1/91	Coordination Memo re: Load Compressor Flow Measurement HSA 211487
PTX 1065.					10/25/91	Coordination Memo re: Load Compressor Flow Measurements HSA 211483 - 87
PTX 1066.					4/23/69	Hamilton Sundstrand Memorandum To: R.A. Moser, From: A.F. Rapp, Re: Dynamic Analysis of the Surge Control for the L-1011 APU WPI: 651-D31- 000A SUND 006002 - 29 <b>(*See Endnote)</b>
PTX 1067.					7/15/80	Hamilton Sundstrand Memorandum To: K.I. Harner, From: A.T. Chen, Re: Dynamic Simulation and Analysis of the Nonflowing Surge Control for the Modified L-1011 APU SUND 006049 - 127 <b>(*See Endnote)</b>
PTX 1068.					11/4/94	Coordination Memo re: Pressure Ratio Calculation of Low Flow vs. High Flow Predictor (Edelman Ex. 66) HSB 040385 - 88
PTX 1069.					3/9/66	European Patent No. 1,021,797 (Shell) HSB 401400 - 5
PTX 1070.					6/2/91	Coordination Memo re: Airflow Sensor (PTX 877) HSB 065560
PTX 1071.					2/22/91	Engineering Specification APS 3000 ECB Requirements Specification HSA 122288 - 354
PTX 1072.					7/2/91	Engineering Specification APS 3200 ECB Requirements Specification HSA 123378 - 539
PTX 1073.					2/28/91	Engineering Specification APS 3000 System Requirements Specification HSA 127942 - 73
PTX 1074.					2/21/92	Coordination Memo re: Load Compressor Flow Measurements ECB/APU Interfaces HSB 070018 - 19
PTX 1075.					9/10/92	Coordination Memo re: Qualification ECB HSB 070094
PTX 1076.					9/10/92	Coordination Memo re: Qualification ECB HSB 070095
PTX 1077.					10/28/92	Coordination Memo re: Compatibility Test HSB 070147 - 48

PLF. NO.	DEF. NO.	DATE OFFER ED	MARKED	ADMITTED	DATE OF DOC.	DESCRIPTION OF EXHIBITS AND WITNESSES
PTX 1078.					12/18/92	Coordination Memo re: Load Compressor Delta P/P Set Point HSB 070191
PTX 1079.					1/25/93	Coordination Memo re: ECB Interface ICD 2/08/001 HSB 070374 - 83
PTX 1080.					1/27/93	Coordination Memo re: ECB Interface ICD 2/08/001 Draft #6 HSB 070384 - 94
PTX 1081.					3/2/93	Coordination Memo re: Load Compressor Control HSB 070395 - 98
PTX 1082.					2/9/93	Coordination Memo re: IGV Schedule with ECS Demand HSB 075032 - 33
PTX 1083.					2/11/93	Coordination Memo re: IGV Schedule with ECS Min Demand HSB 075036 - 37
PTX 1084.					11/16/93	Coordination Memo re: L/C Bleed and N Fluctuations HSB 060043 - 46
PTX 1085.					10/24/94	Coordination Memo re: L/C Surge Control HSB 060113 - 4
PTX 1086.					12/15/94	Coordination Memo re: Surge Protection HSB 060120
PTX 1087.					1/3/95	Coordination Memo re: ΔP/P Set Point HSB 060122
PTX 1088.					1/11/95	Coordination Memo re: Minimum BCV Flow Leakage for Closed IGV HSB 060123 - 24
PTX 1089.					2/6/95	Coordination Memo re: L/C Corrected Flow HSB 060128
PTX 1090.					9/13/89	APS 3000 Review, APS 3000 Control Systems and Accessories (Suttie Ex. 46) HSA 176217 - 295
PTX 1091.					3/26/93	APS 3200 Engineering Report, Surge Margin Throughout Operating Envelope (Dep. Ex. 242) HSA 211142 - 49
PTX 1092.					2/11/93	Coordination Memo re: IGV Schedule with ECS Min Demand (Dep. Ex. 244) HSA 211379 - 80
PTX 1093.					11/30/82	Coordination Memo re: IGV Schedule with ECS Min Demand (Edelman Ex. 68) HSA 211392 - 93
PTX 1094.					9/17/93	APIC APS 3000 Interface Control Document re: ECB Interfaces (Suttie Ex. 45) HSA 226567 - 76

PLF. NO.	DEF. NO.	DATE OFFER ED	MARKED	ADMITTED	DATE OF DOC.	DESCRIPTION OF EXHIBITS AND WITNESSES
PTX 1095.					3/98	Sundstrand Aerospace, Troubleshooting Guide (Suttie Ex. 42) HSA 240000 - 147
PTX 1096.						Alan Greubel's Lab Notebook, Systems 250, 1/92-11/92 (Greubel Ex. 56) HSA 505292 - 383
PTX 1097.					8/21/90	Coordination Memo re: APU Real-Time Simulation (PTX 876) HSB 045219 - 22
PTX 1098.					7/8/91	Coordination Memo re: APS 3000 Load Compressor Airflow Sensor Characteristics HSB 065472 - 73
PTX 1099.					6/2/91	Coordination Memo re: Airflow Sensor HSB 065560
PTX 1100.					11/26/91	Coordination Memo re: Load Compressor Flow Measurements HSB 065585 - 91
PTX 1101.					12/18/92	Coordination Memo re: Load Compressor $\Delta P/P$ Set Point (Suttie Ex. 47) HSB 215483
PTX 1102.					11/26/91	Coordination Memo re: Load Compressor Flow Measurements (Ducrocq Ex. 83) HSB 215520 - 22
PTX 1103.						Surge Control Logic Drawings (Suttie Ex. 12) HSA 161477 - 79
PTX 1104.					6/23/92	Coordination Memo re: $\Delta P$ Measurement (Suttie Ex. 13) HSB 215504 - 6
PTX 1105.					2/4/97	Figure 12A: Closed Loop PI Surge Control (Suttie Ex. 17) HSA 96920
PTX 1106.					2/4/97	Figure 12I: Surge Control Choked Flow Compensation Logic (Suttie Ex. 19) HSA 96921
PTX 1107.					2/4/97	Figure 12C: BCV Altitude Block-Out, Authority Limit, Rate Limit and Sequencing Logic (Suttie Ex. 20) HSA 96922
PTX 1108.						BCV Control Diagram (Suttie Ex. 21)
PTX 1109.					3/16/90	Revised Agenda, Turbomecca/SPS Meeting - Control Systems (Suttie Ex. 22) HSA 176194 - 216
PTX 1110.					10/16/90	Sundstrand Memo re: APS 3000 Reverse Pneumatic Flow (Suttie Ex. 44) HSA 152363
PTX 1111.					1/13/93	Coordination Memo re: Load Compressor $\Delta P/P$ Set Point (Suttie Ex. 48) HSB 215481 - 82

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PTX 1112.					4/4/93	Sundstrand Memo re: Differences Between ICD (Document 2/08/001) and Software Version 1.0.1 (Suttie Ex. 49) HSA 351515 - 19
PTX 1113.					1/29/93	Coordination Memo re: Load Compressor Control (Dep. Ex. 232) HSB 035001 - 3
PTX 1114.					2/1/93	Sundstrand Memo re: B Factor Calculations (Dep. Ex. 239) HSB 260155 - 56
PTX 1115.					1/11/93	APS3200 Qualification S/W 0.1.5 Start Control Diagrams HSA 226466 - 72
PTX 1116.					4/5/93	Sundstrand Memo re: Software Version 1.0.1 Definition (Dep. Ex. 247) HSA 351507 - 14
PTX 1117.					3/23/93	Sundstrand Memo re: APS3200 S/W Version 1.0 (Dep. Ex. 249) HSA 351528 - 35
PTX 1118.					9/21/89	AI-TM/Sundstrand, A324 APU Meeting, APS 3000 Control Systems and Accessories (Ducrocq Ex. 72) HSA 176718 - 61
PTX 1119.					10/25/91	Coordination Memo re: Load Compressor Flow Measurements (Ducrocq Ex. 84) HSA 146418 - 22
PTX 1120.					9/1/92	Sundstrand Memo re: APS3200 S/W Version TD2.14 (Edelman Ex. 59) HSA 225909 - 14
PTX 1121.					2/21/92	Coordination Memo re: Load Compressor Flow Measurements ECB/APU Interfaces (Edelman Ex. 60) HSA 211515 - 16
PTX 1122.					10/24/94	Coordination Memo re: L/C Surge Control System (Edelman Ex. 64) HSB 060111 - 12
PTX 1123.					11/3/94	Coordination Memo re: Load Compressor Control Design - LC Pressure Ratio as Flow Predictor (Edelman Ex. 65) HSB 040384
PTX 1124.					2/22/93	Coordination Memo re: Load Compressor $\Delta P/P$ (Edelman Ex. 69) HSA 211155 - 56
PTX 1125.					11/13/93	Figure 1: APS 3200 System Schematic (Greubel Ex. 52) HSA 97878
PTX 1126.						Demonstratives: Foreseeability
PTX 1127.						Demonstratives: Tangential Relationship
PTX 1128.						Demonstratives: Other Reasons



PLF. NO.	DEF. NO.	DATE OFFER ED	MARKED	ADMITTED	DATE OF DOC.	DESCRIPTION OF EXHIBITS AND WITNESSES
PTX 1129.						Demonstratives: To Illustrate Deposition Testimony and Expert Report of Melvin Garner
PTX 1130.						Demonstratives: To Illustrate Deposition Testimony and Expert Reports of Gerard Muller
PTX 1131.					03/10/93	Coordination Memo re Understand B Factor HSB 035165
PTX 1132.					04/11/94	Coordination Memo re $\Delta P/P$ Setpoint Modification HSB 040123 - 124
PTX 1133.					09/09/94	Coordination Memo re Load Compressor Surge HSB 040317 - 318
PTX 1134.					09/26/94	Coordination Memo re APS 3200 'Surge' Program Plan HSB 040323 - 324
PTX 1135.					11/03/94	Coordination Memo re Load Compressor Control Design - LC Pressure Ratio as Flow Predictor HSB 040384
PTX 1136.					3/10/93	Coordination Memo re Transient Bend Information HSB 035163 - 164
PTX 1137.					02/02/93	Coordination Memo re Load Compressor Control HSB 035011 - 012
PTX 1138.					10/20/92	Coordination Memo re $\Delta P/P$ Signal Noise: request for status of investigation HSB 055051
PTX 1139.					11/04/94	Coordination Memo re Pressure Ratio Calculation of Low Flow v. High Flow Predictor HSB 040385 - 387
PTX 1140.					09/16/92	Coordination Memo re Load Compressor Airflow Measurement HSB 050656 - 658
PTX 1141.					08/26/92	Coordination Memo re $\Delta P/P$ sensor Noise; discussion of test results HSB 050591 - 598
PTX 1142.					08/19/92	Coordination Memo re L/C Airflow Measurement HSB 050562 - 563
PTX 1143.					08/03/92	Coordination Memo re L/C Airflow Measurement HSB 050532
PTX 1144.					07/29/92	Coordination Memo re Q22 Load Compressor Diffuser HSB 050531
PTX 1145.					07/23/92	Coordination Memo re L/C Airflow Measurement HSB 050458

PLF. NO.	DEF. NO.	DATE OFFERED	MARKED	ADMITTED	DATE OF DOC.	DESCRIPTION OF EXHIBITS AND WITNESSES
PTX 1146.					07/10/92	Coordination Memo re Starter Motor & Load Compressor Airflow Measurement HSB 050438
PTX 1147.					06/24/92	Coordination Memo re Load Compressor Airflow Measurement HSB 050435
PTX 1148.					06/22/92	Coordination Memo re Load Compressor Airflow measurement HSB 050434
PTX 1149.					06/03/92	Coordination Memo re Systems Testing HSB 050420
PTX 1150.					01/13/92	Coordination Memo re SPS Support for TM Engine operation HSB 050281 - 282
PTX 1151.					10/25/91	Coordination Memo re Load Compressor Flow Measurements HSB 065623 - 626
PTX 1152.					01/15/92	Coordination Memo re Load Compressor Flow Measurements HSB 065584
PTX 1153.						<a href="http://www.eucomairlines.de">www.eucomairlines.de</a>
PTX 1154.						<a href="http://www.rolls-royce.com/civil_aerospace/default.jsp">http://www.rolls-royce.com/civil_aerospace/default.jsp</a>
PTX 1155.						<a href="http://www.aviatorsale.com/seller/431/">http://www.aviatorsale.com/seller/431/</a>
PTX 1156.						<a href="http://home2.swipnet.se/~w-26408/1011link.htm">http://home2.swipnet.se/~w-26408/1011link.htm</a>
PTX 1157.						<a href="http://www.tristar500.net/">http://www.tristar500.net/</a>
PTX 1158.						<a href="http://www.caa.co.uk/default.aspx?categoryid=60&amp;pagetype=90&amp;pageid=124">http://www.caa.co.uk/default.aspx?categoryid=60&amp;pagetype=90&amp;pageid=124</a>
PTX 1159.						<a href="http://trijets.net/tristar/">http://trijets.net/tristar/</a>
PTX 1160.					06/00/79	Manual of Patent Examining - Original Fourth Edition. U.S. Department of Commerce & U.S. Patent and Trademark Office
PTX 1161.						Curriculum Vitae of Melvin Garner
PTX 1162.						Curriculum Vitae of Gerard Muller

\* Honeywell intends to move in limine to exclude any reference to or reliance on L1011 documents by Sundstrand at trial. Honeywell reserves its rights to use the L1011 documents listed herein if said motion is not granted by the court.



**IN THE UNITED STATES DISTRICT COURT  
FOR DISTRICT OF DELAWARE**

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HONEYWELL INTERNATIONAL INC.,  
and HONEYWELL INTELLECTUAL  
PROPERTIES INC.,

Plaintiffs,

v.

HAMILTON SUNDSTRAND CORP.,

Defendant.

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Civil Action No. 99-309-GMS

**EXHIBIT 6  
HAMILTON SUNDSTRAND'S  
OBJECTIONS TO HONEYWELL'S EXHIBITS**

Hamilton Sundstrand's objections to Honeywell's exhibits are attached.

HSC specifically reserves its right to object to any newly added exhibits between now and the conclusion of the trial in this matter.

**Honeywell Int'l v. Hamilton Sundstrand Corp.**  
**Case No. 99-309-GMS**  
**Defendant's Objections to Plaintiff's Exhibits**

<b>Exh. No.</b>	<b>Objections</b>
PTX1001	
PTX1002	
PTX1003	
PTX1004	
PTX1005	
PTX1006	
PTX1007	
PTX1008	
PTX1009	
PTX1010	
PTX1011	
PTX1012	
PTX1013	
PTX1014	
PTX1015	
PTX1016	402; 403
PTX1017	402; 403
PTX1018	802
PTX1019	
PTX1020	402; 403
PTX1021	
PTX1022	
PTX1023	
PTX1024	
PTX1025	402; 403
PTX1026	
PTX1027	

**Exh. No.      Objections**

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PTX1028

PTX1029

PTX1030

PTX1031      402; 403

PTX1032      402; 403

PTX1033      402; 403

PTX1034

PTX1035

PTX1036

PTX1037

PTX1038

PTX1039

PTX1040

PTX1041

PTX1042      402; 403

PTX1043      402; 403

PTX1044      402; 403

PTX1045      402; 403

PTX1046

PTX1047      402; 403

PTX1048      402; 403

PTX1049      402; 403

PTX1050      402; 403

PTX1051      402; 403

PTX1052      402; 403

PTX1053

PTX1054      402; 403

PTX1055      402; 403

PTX1056

PTX1057      402; 403

**Exh. No.      Objections**

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PTX1058

PTX1059

PTX1060

PTX1061

PTX1062

PTX1063

PTX1064

PTX1065

PTX1066

PTX1067

PTX1068

PTX1069

PTX1070      402; 403

PTX1071

PTX1072

PTX1073

PTX1074

PTX1075

PTX1076

PTX1077

PTX1078

PTX1079

PTX1080

PTX1081

PTX1082

PTX1083

PTX1084

PTX1085

PTX1086

PTX1087

**Exh. No.      Objections**

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PTX1088

PTX1089

PTX1090      402; 403

PTX1091

PTX1092

PTX1093

PTX1094

PTX1095

PTX1096

PTX1097

PTX1098

PTX1099      402; 403; duplicate

PTX1100

PTX1101      Duplicate

PTX1102      Duplicate

PTX1103

PTX1104      402; 403

PTX1105

PTX1106

PTX1107

PTX1108

PTX1109      402; 403

PTX1110      402; 403

PTX1111

PTX1112

PTX1113

PTX1114

PTX1115

PTX1116

PTX1117



**Exh. No.      Objections**

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PTX1118      402; 403

PTX1119

PTX1120

PTX1121      Duplicate

PTX1122

PTX1123

PTX1124

PTX1125      Incomplete

PTX1126

PTX1127

PTX1128

PTX1129

PTX1130

PTX1131

PTX1132

PTX1133

PTX1134

PTX1135

PTX1136

PTX1137

PTX1138

PTX1139

PTX1140

PTX1141

PTX1142

PTX1143

PTX1144

PTX1145

PTX1146

PTX1147

<b>Exh. No.</b>	<b>Objections</b>
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PTX1148	
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PTX1149	
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PTX1150	
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PTX1151	
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PTX1152	
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PTX1153	402; 403; 802; 803; 901
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PTX1154	402; 403; 802; 803; 901
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PTX1155	402; 403; 802; 803; 901
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PTX1156	402; 403; 802; 803; 901
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PTX1157	402; 403; 802; 803; 901; Not Translated
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PTX1158	402; 403; 802; 803; 901
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PTX1159	
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PTX1160	
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PTX1161	
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PTX1162	
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# EXHIBIT 7

# United States District Court

DISTRICT OF DELAWARE

Honeywell International Inc. and  
Honeywell Intellectual Properties Inc.

EXHIBIT AND WITNESS LIST

v.

Hamilton Sundstrand Corporation

Case Number: 99-309-GMS

PRESIDING JUDGE Gregory M. Sleet					PLAINTIFF'S ATTORNEY Thomas C. Grimm	DEFENDANT'S ATTORNEY Richard D. Kirk
TRIAL DATE(S) March 23-24, 2006					COURT REPORTER Kevin Maurer	COURTROOM DEPUTY April Walker
PLF. NO.	DEF. NO.	DATE OFFERED	MARKED	ADMITTED	DESCRIPTION OF EXHIBITS* AND WITNESSES	
	DTX 0101				; Hamilton Standard L 1011 APU Student Notes document ; SUND003237-SUND003387;	
	DTX 0102				05/08/1969; Hamilton Standard Drawing No. 738712 re: Housing Compressor; SUND002830; HWL Remand 003	
	DTX 0103				05/20/1970; Hamilton Standard Drawing re: Power Unit, Auxiliary; SUND002835; HWL Remand 002	
	DTX 0104				05/30/1975; Hamilton Standard Memo re: L-1011 APU Surge Control Redesign Feasibility Study; SUND000268-SUND000294 ; HSC Remand 047	
	DTX 0105				08/15/1975; Hamilton Standard Manual Master Key L1011 Tristar Auxiliary Power Unit Volume 2 - System Description/Operation - Trouble Shooting; SUND000431- SUND000667; HWL Remand 005	
	DTX 0106				08/15/1975; Hamilton Standard Manual Master Key L1011 Tristar Auxiliary Power Unit Volume 2 - System Description/Operation - Trouble Shooting with annotations; SUND003968-SUND004192;	
	DTX 0107				08/26/1975; Hamilton Standard Memo re: L-1011 APU Surge Control 3.5:1 Boosted Venturi Signal Probe Evaluation; SUND000304-SUND000323;	
	DTX 0108				10/28/1975; Hamilton Standard Memo re: Transmittal of Report on L-1011 APU Surge Control Improvements; SUND000669-SUND000757; HWL Remand 004	
	DTX 0109				10/18/1979; Hamilton Standard Report: Qualification Test Report of the APU Model ST6C-421 for the L-1011 Tristar Aircraft Airplane and Supplements 1, 2 and 3; SUND000776-SUND000962;	
	DTX 0110				02/00/1980; Hamilton Standard Development Test Procedure And Report of the Surge Valve and Control HS P/N's 738057-1 & 738058-1 for the L-1011 Tristar Aircraft Auxiliary Power Unit; SUND000324-SUND000376;	
	DTX 0111				05/29/1981; Hamilton Standard Specification No. HS 5839: Shock Switch and Adjustable Orifice, L-1011 APU Surge Control System Revision A; SUND000295- SUND000303;	
	DTX 0112				10/15/1997; Hamilton Standard Revision No. 19 to Overhaul Manual 49-00-01; SUND002250-SUND002705;	
	DTX 0113				; APS 3000 Systems & Controls Proposal; HSA176594-HSA176685; Jonestrask 002	

PLF. NO.	DEF. NO.	DATE OFFERED	MARKED	ADMITTED	DESCRIPTION OF EXHIBITS* AND WITNESSES
	DTX 0114				; Appendix: Derivation of Corrected Parameters; ;
	DTX 0115				; BCV Control flow chart; ;
	DTX 0116				; Graph: Figure 1: Load Compressor DP/P vs. Corrected Exit Flow; ;
	DTX 0117				; Graph: Figure 5: S/N Q22 Test Data 94% Corr Speed (T2=128 F) BCV Open to Delivery for all Points; ;
	DTX 0118				; Graph: Figure 6: S/N Q22 Test Data 100% Corr Speed (T2=60F) BCV Open to Delivery for all Points; ;
	DTX 0119				; Graph: Figure 7: S/N Q22 Test Data 103% Corr Speed (T2=30F) BCV Open to Delivery for all Points; ;
	DTX 0120				; Graph: Figure 13: Engine 1500 Test Data 2 Pack Mode 98% Nc (T2=85F); ;
	DTX 0121				; Graph: Figure 14: Engine 1500 Test Data 2 Pack Mode 98% Nc (T2=85F); ;
	DTX 0122				11/15/1986; Hamilton Standard Surge Valve Control Overhaul Manual; SUND001996-SUND002059;
	DTX 0123				08/21/1990; Sundstrand Coordination memo re: APU Real-Time Simulation; HSB045219-HSB045222;
	DTX 0124				02/11/1991; Sundstrand Memo re: Air flow sensor; HSA151726; Gruebel 055
	DTX 0125				02/22/1991; Sundstrand Engineering Specification APS 3000 ECB Requirements Specification; HSA122288-HSA122354;
	DTX 0126				02/28/1991; Sundstrand Engineering Specification APS-3000 System Requirements; HSA127942-HSA127973;
	DTX 0127				07/08/1991; Sundstrand Coordination memo re: APS 3000 load compressor airflow sensor characteristics; HSB065472-HSB065478; HSC Remand 042
	DTX 0128				10/01/1991; Sundstrand Coordination memo re: Load compressor flow measurements; HSA211487;
	DTX 0129				10/25/1991; Sundstrand Coordination memo re: load compressor flow measurements; HSA146418-HSA146422;
	DTX 0130				11/26/1991; Sundstrand Coordination memo re: Load compressor flow measurements; HSB065585-HSB065591; HSC Remand 038
	DTX 0131				02/19/1992; Sundstrand Coordination memo re: APS performance northwest BAFO; HSB070016-HSB070019;

PLF. NO.	DEF. NO.	DATE OFFERED	MARKED	ADMITTED	DESCRIPTION OF EXHIBITS* AND WITNESSES
	DTX 0132				02/21/1992; Sundstrand Coordination Memo re: Load compressor flow measurements ECB/APU interfaces; HSA211515-HSA211516; Edelman 060
	DTX 0133				04/22/1992; Sundstrand Coordination memo re: ICD 02/08/001 issue 2; HSB050382-HSB050389;
	DTX 0134				10/12/1992; Sundstrand Coordination memo re: ECS demand signal/APS3200 performance; HSB055024;
	DTX 0135				10/26/1992; Sundstrand Coordination memo re: compatibility performance; HSB055058-HSB055059;
	DTX 0136				11/05/1992; Sundstrand Coordination memo re: Performance test for CEPr; HSB055088-HSB055092;
	DTX 0137				11/25/1992; Sundstrand Coordination memo re: software version 0.1.3 altitude build; HSB055222-HSB055226;
	DTX 0138				12/01/1992; Sundstrand Coordination Memo re: IGV Schedule with ECS Demand; HSA211392-HSA211393; Edelman 068
	DTX 0139				12/15/1992; Sundstrand Coordination Memo re: Load Compressor Data; HSB035082; 233
	DTX 0140				12/18/1992; Sundstrand Coordination memo re: load compressor set point; HSB070191-HSB070193;
	DTX 0141				01/13/1993; Sundstrand Coordination memo re: load compressor AP/P setpoint; HSB070256-HSB070257;
	DTX 0142				01/19/1993; Sundstrand Coordination memo re: ECB Interfaces, ICD 2/08/001; HSB070258-HSB070268;
	DTX 0143				01/25/1993; Sundstrand Coordination memo re: ECB Interface ICD 2/08/001; HSB070374-HSB070383;
	DTX 0144				01/29/1993; Sundstrand Coordination memo re: load compressor control; HSB035001-HSB035003 ;
	DTX 0145				02/02/1993; Sundstrand Coordination memo re: load compressor control; HSB035011-HSB035012;
	DTX 0146				02/03/1993; Sundstrand Coordination Memo re: Load Compressor Control; HSA152238-HSA152244;
	DTX 0147				02/05/1993; Sundstrand Coordination Memo re: Load Compressor Delta P/P; HSB030430-HSB030431; 231
	DTX 0148				02/09/1993; Sundstrand Coordination memo re: IGV schedule with ECSD Demand; HSB075032-HSB075033;
	DTX 0149				02/16/1993; Sundstrand Coordination memo re: ICD 2/08/001 issue 6; HSB075039-HSB075051;

PLF. NO.	DEF. NO.	DATE OFFERED	MARKED	ADMITTED	DESCRIPTION OF EXHIBITS* AND WITNESSES
	DTX 0150				02/22/1993; Sundstrand Coordination memo re: load compressor AP/P; HSB075080-HSB075081;
	DTX 0151				03/10/1993; Sundstrand Coordination memo re: understanding the B Factor; HSB035165;
	DTX 0152				04/04/1993; Sundstrand Memo re: Differences between ICD (Document 2/08/001) and Software Version 1.0.1; HSA351515-HSA351519; Suttie 049
	DTX 0153				04/08/1993; Sundstrand Coordination memo re: SW version 1.0.1 discrepancies; HSB035239-HSB035240;
	DTX 0154				05/27/1993; Sundstrand Coordination memo re: B-Factor control logic problems; HSB035443-HSB035452; Edelman 062
	DTX 0155				07/12/1993; Sundstrand Coordination memo re: Q21M9; Perf Qual Test; SW version 1.0.1 discrepancies; HSB035558-HSB035561;
	DTX 0156				09/24/1993; APIC APS 3000 Interface Control Document re: ECB Interfaces; HSA226567-HSA226576;
	DTX 0157				10/13/1993; Sundstrand Coordination memo re: Flight V0074 LC transient pressure fluctuations; HSB035779-HSB035782;
	DTX 0158				11/12/1993; APIC Engineering Specification APS3200 System Requirements Specification; HSA097850-HSA097882;
	DTX 0159				11/12/1993; Sundstrand Engineering Specification APS 3200 ECB Requirements Specifications Revision J; HSA123378-HSA123539;
	DTX 0160				12/07/1993; Sundstrand Coordination Memo re: IGV Position compensation in S/W; HSB035839; 236
	DTX 0161				09/30/1994; Sundstrand Coordination memo re: surge control; HSB060097-HSB060099;
	DTX 0162				10/24/1994; Sundstrand Coordination memo re: L/C surge control system; HSB060111-HSB060112; Edelman 064
	DTX 0163				11/03/1994; Sundstrand Coordination memo re: load compressor control design - LC pressure ratio as flow predictor; HSB040384; Edelman 065
	DTX 0164				11/04/1994; Sundstrand Coordination memo re: pressure ratio calculation of low flow vs. high flow predictor; HSB040385-HSB040388;
	DTX 0165				12/05/1994; APIC presentation: APS3200 Bleed System; HSA226735-HSA226776; Szillat 004; Edelman 071
	DTX 0166				01/03/1995; Sundstrand Coordination memo re: AP/P set point; HSB060122;
	DTX 0167				07/02/1991; Sundstrand APS 3200 Engineering Specifications ECB Requirements Specifications Revision N; HSA096782-HSA096965;

PLF. NO.	DEF. NO.	DATE OFFERED	MARKED	ADMITTED	DESCRIPTION OF EXHIBITS* AND WITNESSES
	DTX 0168				02/04/1997; APIC diagrams re: surge control; HSA096920-HSA096922;
	DTX 0169				03/00/1998; Sundstrand Troubleshooting Guide; HSA240000-HSA240147;
	DTX 0170				12/01/2000; Expert Report of John Szillat; ; HSC Remand 043
	DTX 0171				; File: Critical Design Review; AS123284-AS123290; HSC Remand 021
	DTX 0172				; Handwritten memo re: Surge Control Schedule Change For GTCP 331-200; AS123265-AS123268; HSC Remand 020
	DTX 0173				; AlliedSignal Presentation re: GTC131-3(A) load compressor surge control system; RMDAS000218-RMDAS000224; HSC Remand 034
	DTX 0174				; Garrett Corp. Employees Guide to Patents and Inventions; RMDAS000050- RMDAS000063;
	DTX 0175				; File: Simulation of compressor; AS122993-AS123000 ; HSC Remand 009
	DTX 0176				; Data, graphs, notes re: surge systems; AS146108-AS146122;
	DTX 0177				; Handwritten memo re: information on surge system; AS146096-AS146102;
	DTX 0178				05/19/1969; Garrett Corp. memo re: Guide to patents and inventions; RMDAS000048;
	DTX 0179				04/15/1976; Airesearch Mfg. Memo re: Pneumatic Control System for F-18 Demonstration; AS199782-AS199809; HSC 004
	DTX 0180				07/06/1977; Airesearch Mfg. Co. memo re: F-18 surge valve; AS079211-AS085912;
	DTX 0181				03/03/1978; Garrett Airesearch Model GTCP331-250 Auxiliary Power Unit for the Boeing New Airplane, Preliminary Technical Proposal 31-2834 Vol. 1; ; HSC 023
	DTX 0182				03/15/1978; Airesearch MFG. memo re: F-18 surge control system development summary; AS085893-AS085912; HSC Remand 007
	DTX 0183				03/29/1978; Airesearch Mfg. memo re: Fooled F-18 surge control valve concept; AS085951-AS085955;
	DTX 0184				06/09/1978; Airesearch Mfg. memo re: GTCP331 surge control valve; AS201705- AS201709; HSC Remand 008
	DTX 0185				07/06/1979; Honeywell Preliminary Design Review for the Model GTCP331-200 Auxiliary Power Unit and Electric Control Unit July 23-24, 1979 excerpt; AS200041; AS200070-AS200080; HSC Remand 010



PLF. NO.	DEF. NO.	DATE OFFERED	MARKED	ADMITTED	DESCRIPTION OF EXHIBITS* AND WITNESSES
	DTX 0186				07/06/1979; Honeywell Preliminary Design Review for the Model GTCP331-200 [ ] Auxiliary Power Unit and Electronic Control Unit July 23-24, 1979; AS200041-AS200490;
	DTX 0187				08/01/1979; Garrett Technical Discussions Power Section Surge Protection Airesearch Model GTCP331-250(E) APU; AS037703-AS037714;
	DTX 0188				08/11/1979; Airesearch Mfg. GTCP331-200 APU Project Development Test Outline: Surge Protection System Evaluation; AS123039-AS123043; HSC Remand 011
	DTX 0189				09/10/1979; Garrett GTCP331-200/250 APU Project Development Test Outline re: Surge Valve control; AS147056-AS147063;
	DTX 0190				11/26/1979; Garrett drawings re: Model GTCP331-200 Surge System Requirements; AS122953-AS122956;
	DTX 0191				12/06/1979; Garrett Coordination memo re: L/C surge control; AS123106-AS123116;
	DTX 0192				12/19/1979; Garrett presentation re: model GTCP331-200 surge system review; AS199763-AS199778; HSC Remand 012
	DTX 0193				12/28/1979; Garrett Coordination memo re: 331-200 driven compressor maps; AS147278-AS147296; HSC Remand 014
	DTX 0194				02/15/1980; Garrett Procurement Specification for the Electronic Control Box (ECB) P/N 2117402-1 used with Airesearch Model GTCP331-250 [E] Auxiliary Power Unit; ;
	DTX 0195				03/04/1980; File: Boeing SCV schedule; calculation of schedule for feedback actuator; AS123053-AS123057; HSC Remand 015
	DTX 0196				04/01/1980; Garrett memo re: GTCP331-200/250 IGV position loop definition; AS122946-AS122948;
	DTX 0197				04/17/1980; Airesearch memo re: update on the GTCP331 closed loop surge control testing; AS146792-AS146819; HSC Remand 017
	DTX 0198				01/28/1981; Garrett memo re: GTC-200 (F-18 APU) surge control system and MASC; AS086013-AS086026; HSC Remand 018
	DTX 0199				05/14/1981; Garrett Technical Description of the Electric Control Unit for the GTCP331-200(A) APU P/N 2117342-1; AS022251-AS022318;
	DTX 0200				12/01/1981; File: GTCP 331-250 comp map; AS147274-AS147277; HSC Remand 016
	DTX 0201				12/02/1981; Garrett Technical Description of Electronic Control Unit P/N 2117342-1 for the GTCP331-200(A) Auxiliary Power Unit; AS025997-AS026067; HSC Remand 019
	DTX 0202				12/16/1983; Garrett Memo re: Test results of GTCP85-1000 diffuser flow sensor; RMDAS000070-RMDAS000091 ; HSC Remand 022
	DTX 0203				05/01/1985; Garrett memo re: selection and operation of the GTC131 surge control system; RMDAS000092-RMDAS000103; HSC Remand 023

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	DTX 0204				09/20/1985; Garrett memo re: GTCP36-300 surge control system dynamic analysis and design; RMDAS000225-RMDAS000252; HSC Remand 027
	DTX 0205				12/06/1985; Handwritten notes with document re: GTCP131 diffuser meeting; RMDAS000215-RMDAS000217; HSC Remand 033
	DTX 0206				07/07/1986; Garrett presentation re: Garrett GTCP331-200 APU for the B767-400 Aircraft; AS027541-AS027572; HSC Remand 024
	DTX 0207				04/22/1988; AlliedSignal minutes of Turbomecca meeting in PAU on April 27-29, 1980; AS004753-AS004758 ;
	DTX 0208				09/19/1988; AlliedSignal Functional Description for the GTCP331-350[C] Auxiliary Power Unit/Subsystem and Electronic Control Box; ;
	DTX 0209				04/28/1989; File: flow sensor, containing coordination memos re: flow sensor; AS011043-AS011060;
	DTX 0210				05/04/1989; AlliedSignal GAPD/Turbomecca coordination memo re: selection of static pressure pickup for surge control; AS009522-AS009524; HSC Remand 025
	DTX 0211				; AlliedSignal Employees Guide to Patents and Inventions; AS183527-AS183573 ;
	DTX 0212				12/05/1996; AlliedSignal Procurement Specification for the GTCP331-350[C] Auxiliary Power Unit Load Compressor Part Number 3804007-ALL; AS010853-AS010949;
	DTX 0213				; 331-350 design notebooks (production ordered by the Court); ;
	DTX 0214				02/01/1990; Coordination memo re: load compressor surge control system; RMDAS000480-RMDAS000483;
	DTX 0215				1927; German Article: Ackert, Gas Dynamics and English Translation; SUND004899-SUND004952;
	DTX 0216				09/00/1980; Article: Ashjaee, Straight-Walled, Two-Dimensional Diffusers - Transitory Stall and Peak Pressure Recovery; SUND004953-SUND004960;
	DTX 0217				03/00/1977; Article: Baghdadi, The effect of rotor blade wakes on Centrifugal Compressor Diffuser Performance - A Comparative Experiment; SUND007981-SUND007988;
	DTX 0218				06/00/1981; Article: Bardina, A Prediction Method for Planar Diffuser Flows; SUND005826-SUND005832;
	DTX 0219				1978; Excerpt from Mark's Standard Handbook for Mechanical Engineers, Baumeister; SUND003930-SUND003933 ;
	DTX 0220				1958; Excerpts from Mechanical Engineers' Handbook, Baumeister; ;
	DTX 0221				1971; Excerpt from Fluid Meters Their Theory and Application: Bean, The Classification of Fluid Meters; SUND006244-SUND006252;

PLF. NO.	DEF. NO.	DATE OFFERED	MARKED	ADMITTED	DESCRIPTION OF EXHIBITS* AND WITNESSES
	DTX 0222				; Boyce, Tutorial Session on Practical Approach to Surge and Surge Control Systems; SUND003854-SUND003883;
	DTX 0223				05/10/1992; Article: Bonciani, Unsteady Flow Phenomena in an Industrial Centrifugal Compressor Stage; SUND004432-SUND004443;
	DTX 0224				06/18/1914; Article: Buckingham, On Physically Similar Systems; Illustrations of the Use of Dimensional Equations; SUND004964-SUND004995;
	DTX 0225				10/00/1981; Standard University Report - Childs, A Computational Method for Subsonic Compressible Flow in Diffusers; SUND004996-SUND005132;
	DTX 0226				1979; The American Society of Mechanical Engineers Article: Conrad, The Calculation of Performance Maps for Centrifugal Compressors with Vane-Island Diffusers; SUND006128-SUND006143;
	DTX 0227				1971; The American Society of Mechanical Engineers Article: Copp, NACA Research Memorandum, Effects of Inlet Wall contour on the Pressure Recovery; SUND006144-SUND006171;
	DTX 0228				03/25/1974; Create Science and Technology Technical Note: Dean, The Fluid Dynamic Design of Advanced Centrifugal Compressors; SUND005160-SUND005259;
	DTX 0229				02/00/1970; U.S. Army Aviation Materiel Laboratories Technical Report 69-76: Dean, Fluid Mechanics Analysis of High-Pressure-Ratio Centrifugal Compressor Data; SUND006437-SUND007011;
	DTX 0230				1984; Russian Article: Deych, Gidrogazodinamika and English translation; SUND005780;
	DTX 0231				04/28/1972; Article: Deich, Gas Dynamics of Diffusers and Exhaust Ducts of Turbomachines; SUND005296-SUND005314;
	DTX 0232				1978; Excerpt from Fluid Mechanics Thermodynamics of Turbomachinery, Dixon; SUND007948-SUND007964;
	DTX 0233				03/00/1979; NASA Report: Dolan, Design, Development, and Test of a Laster Velocimeter for a Small 8:1 Pressure Ratio Centrifugal Compressor; SUND005326-SUND005333;
	DTX 0234				06/06/2005; Article: Dubitsky, Proceedings of GT2005 ASME Turbo Expo 2005; Power for Land, Sea and Air June 6-9, 2005: Vaneless Diffuser Advanced Model; RMDAS000296-RMDAS000307;
	DTX 0235				05/00/1968; Article: Fallin, Controls for an Axial Turboblower; HSC100923-HSC100926;
	DTX 0236				10/00/1977; Article: Fehervari, Asymmetric Algorithm Tightens Compressor Surge Control; HSC100920-HSC100922;
	DTX 0237				05/06/1986; Article from The Third International Conference on Turbocharging and Turbochargers: Fisher, Development of Vaned Diffuser Compressors for Heavy Duty Diesel Engine Turbochargers; SUND004222-SUND004233;
	DTX 0238				03/00/1981; Journal Mechanical Engineering Science: Fisher, A study of Diffuser/Rotor Interaction in a Centrifugal Compressor; SUND004234-SUND004241 ;
	DTX 0239				12/10/1909; Article: Gibson, On the Flow of Water through Pipes and Passages having Converging or Diverging Boundaries; SUND005913-SUND005925 ;

PLF. NO.	DEF. NO.	DATE OFFERED	MARKED	ADMITTED	DESCRIPTION OF EXHIBITS* AND WITNESSES
	DTX 0240				1972; Excerpt from NASA Turbine Design and Application Volume 1, Glassman; SUND003940-SUND003946;
	DTX 0241				1996; Excerpt from Genesis of the Jet, Frank Whittle and the Invention of the Jet, Golley; SUND005958-SUND005960;
	DTX 0242				11/00/1970; Excerpt from Mechanics and Thermodynamics of Propulsion, Chemical Rockets, Expansion in Nozzles, Hill; SUND003951-SUND003956;
	DTX 0243				1958; Article: Horlock, Fluid Mechanics and Thermodynamics of Axial Compressors, Some Concepts; SUND006273-SUND006303;
	DTX 0244				1956; Article: Howarth, Modern Developments in the Fluid Dynamics High Speed Flow; SUND003541-SUND003547 ;
	DTX 0245				2001; Excerpt from Jane's Civil Aircraft - Lockheed L-1011 Tristar, Aboulafia; SUND005961-SUND005962;
	DTX 0246				1984; Article: Jansen, Improvements in Surge Margin Centrifugal Compressors; SUND003408-SUND003424;
	DTX 0247				12/00/1976; Create Technical Note: Japikse, The development and Design of High Performance Turbomachinery; SUND006304-SUND006342;
	DTX 0248				07/00/1979; Engineering for Power Article: Japikse, Annular Diffuser Performance for an Automotive Gas Turbine; SUND005537-SUND005551;
	DTX 0249				1982; Article: Japikse, Advanced Diffusion Levels in Turbocharger Compressors and Component Matching; SUND004570-SUND004583;
	DTX 0250				1984; Turbomachinery Diffuser Design Technology, Japikse; ;
	DTX 0251				06/08/1986; ASME Article: Japikse, Optimization of Industrial Centrifugal Compressors, Part 6A: Studies in Component in Performance - Eight Design Cases from 1972 to 1982; SUND004526-SUND004541;
	DTX 0252				06/08/1986; ASME Article: Japikse, Optimization of Industrial Centrifugal Compressors, Part 6B: Studies in Component in Performance - Eight Design Cases from 1972 to 1982; SUND004542-SUND004559;
	DTX 0253				1996; Centrifugal Compressor Design and Performance, Japikse; ;
	DTX 0254				1997; Introduction to Turbomachinery, Japikse; ;
	DTX 0255				1998; Diffuser Design Technology, Japikse; ;
	DTX 0256				2003; Axial and Radial Turbines, Moustapha; ;
	DTX 0257				; ASME Article: Jiang, Improved Vane-Island Diffusers at High Swirl; SUND004560-SUND004569;

PLF. NO.	DEF. NO.	DATE OFFERED	MARKED	ADMITTED	DESCRIPTION OF EXHIBITS* AND WITNESSES
	DTX 0258				05/00/1974; Article: Juhasz, Effect of Diffuser Bleed on Performance of an Annular Swirl Can Combustor; SUND005890-SUND005912 ;
	DTX 0259				04/00/1975; Article: Juhasz, Effect of Wall Edge Suction on Performance of a Short Dump Annular Diffuser with Exit Passage Flow Resistance; SUND005574-SUND005606;
	DTX 0260				1975; Article: Juhasz, Effect of Wall Suction on Performance of a Short Annular Diffuser at Inlet Mach Numbers up to 0.5; SUND005552-SUND005573;
	DTX 0261				1982; Article: Kano, Study of Flow Distribution and Aerodynamic Performance of Centrifugal Compressor; SUND005833-SUND005849;
	DTX 0262				00/00/1963; Sulzer Technical Review Article: Kempe, The Control of Turbo-Compressors; HSB401041-HSB401053;
	DTX 0263				01/00/1969; Journal of Engineering for Power Article: Kenny, A Novel Low-Cost Diffuser for High Performance Centrifugal Compressors; SUND006263-SUND006272;
	DTX 0264				; Agard Advisory Group For Aerospace Research & Development: Kenny, Lecture Series No. 39 on Advanced Compressors - Supersonic Radial Diffusers; SUND004283-SUND004317;
	DTX 0265				12/14/1971; ASME Article: Kenny, A Comparison of the Predicted and Measured Performance of High Pressure Ratio Centrifugal Diffusers; SUND003812-SUND003831;
	DTX 0266				03/00/1973; NASA Technical Note: Klassen, Performance of A Low-Pressure-Ratio Centrifugal Compressor with Four Diffuser Designs; SUND003682-SUND003709;
	DTX 0267				01/00/1979; Article: Kolnsberg, Reasons for Centrifugal Compressor Surging and Surge Control; SUND003425-SUND003432;
	DTX 0268				11/00/1980; AGARD Article: Krain, Experimental and Theoretical Investigations on the Internal Flow in a Centrifugal Compressor Diffuser; SUND005850-SUND005871;
	DTX 0269				1980; AGARD Article: Japikse, The Influence of Diffuser Inlet Pressure Fields on The Range and Durability of Centrifugal Compressor Stages; SUND005874-SUND005889 ;
	DTX 0270				02/00/1960; Excerpt form Elements of Gasdynamics, Liepmann; SUND003528-SUND003533;
	DTX 0271				05/08/1967; Chemical Engineering Article: Magliozzi, Control System Prevents Surging in Centrifugal-Flow Compressors; HSC100927-HSC100930;
	DTX 0272				02/02/1970; Garrett Corp. Interim Technical Report: Meshew, Advanced Auxiliary Power System Technology Program; SUND005633-SUND005636;
	DTX 0273				11/00/1974; Article: Newton, The Cost of Inefficiency in Refrigeration Fluid Machinery; SUND005637-SUND005644;
	DTX 0274				12/00/1977; Article: Nisenfeld, Parallel Compressor Control; HSC100905-HSC100909;
	DTX 0275				02/00/1978; Article: Nisenfeld, Parallel Compressor Control ... What Should be Considered; HSC100910-HSC100913;



PLF. NO.	DEF. NO.	DATE OFFERED	MARKED	ADMITTED	DESCRIPTION OF EXHIBITS* AND WITNESSES
	DTX 0276				11/00/1978; Article: Nisenfeld, Parallel Compressor Control; HSC100914-HSC100919;
	DTX 0277				04/00/1975; Excerpt from: Aerodynamic and Mechanical Design of an 8:1 Pressure Ratio Centrifugal Compressor, Osborne; SUND005645-SUND005659;
	DTX 0278				02/23/1976; SAE Article: Pampreen, The Use of Variable Inlet Guide Vanes for Automotive Gas Turbine Engine Augmentation and Load Control; SUND004685-SUND004700;
	DTX 0279				1949; Excerpt from Essentials of Fluid Dynamics with Applications to Hydraulics, Aeronautics, Meteorology and Other Subjects, Prandtl; SUND003534-SUND003540;
	DTX 0280				02/00/1953; NACA Technical Note 2888: Reid, Performance Characteristics of Plane-Wall Two-Dimensional Diffusers; SUND005660-SUND005740;
	DTX 0281				01/06/1966; Journal of Basic Engineering Article: Reneau, Performance and Design of Straight, Two-Dimensional Diffusers; SUND004256-SUND004265;
	DTX 0282				1982; ASME Article: Rodgers, The Performance of Centrifugal Compressor Channel Diffusers; SUND004242-SUND004255;
	DTX 0283				11/30/1973; ASME Article: Rodgers, Design and Test of a Small Two-Stage High Pressure Ratio Centrifugal Compressor; SUND004591-SUND004604;
	DTX 0284				; Article: Rodgers, Impeller Stallings as Influenced by Diffusion Limitations; SUND004815-SUND004845;
	DTX 0285				03/00/1973; Technical Report 73-4: Rodgers, Two-Stage High Pressure-Ratio Centrifugal Compressor prepared for U.S. Army; SUND004701-SUND004766;
	DTX 0286				1957; Excerpt from History of Hydraulics: Roman Water Supply Systems, Rouse; SUND008114-SUND008127;
	DTX 0287				05/00/1975; Create Science and Technology Diffuser Data Book, Rundstadler; SUND003433-SUND003527;
	DTX 0288				09/00/1973; Journal of Fluids of Engineering Article: Rundstadler, Further Data on the Pressure Recovery Performance of Straight-Channel, Plane-Divergence Diffusers at High Subsonic Mach Numbers; SUND004861-SUND004872;
	DTX 0289				09/00/1969; Journal of Basic Engineering Article: Runstadler, Straight Channel Diffuser Performance at High Inlet Mach Numbers; SUND004873-SUND004898 ;
	DTX 0290				1969; Excerpt from SAE Aerospace Applied Thermodynamics Manual: Thermodynamics and Compressible Flow; SUND003233-SUND003236 ;
	DTX 0291				1986; Russian Article: Seleznev, Theory and Calculation of Turbo Compressors and English translation; SUND006253-SUND006262;
	DTX 0292				1970; Russian Article: Deich, Hydro and Gas Dynamics and English translation; SUND007927-SUND007947;
	DTX 0293				1953; Excerpts from The Dynamics and Thermodynamics of Compressible Fluid Flow, Shapiro; SUND006172-SUND006243;

PLF. NO.	DEF. NO.	DATE OFFERED	MARKED	ADMITTED	DESCRIPTION OF EXHIBITS* AND WITNESSES
	DTX 0294				1956; Excerpt from Principles of Turbomachinery: Thermodynamics of Gas Flow, Sheperd; SUND006343-SUND006396;
	DTX 0295				04/00/1964; ASME Article: Shouman, The Use of Compressor-Inlet Preshirl for the Control of Small Gas Turbines; SUND003963-SUND003967;
	DTX 0296				; Article: Sovrano, Experimental Investigation of the Near-Surge Flow in a High Performance Centrifugal Compressor; SUND004767-SUND004790;
	DTX 0297				12/00/1970; Garrett Corp. Report excerpt: Spragins, Advanced Auxiliary Power System Technology Program; SUND005630-SUND005632;
	DTX 0298				12/00/1977; Proceedings of the Sixth Turbomachinery Symposium Article: Boyce, Dynamic Simulation of Compressor Systems; SUND003625-SUND003662;
	DTX 0299				1927; Excerpt from The Flow of Elastic Fluids, Stodola; SUND005774-SUND005779;
	DTX 0300				; Article: Toyama, An Experimental Study of Surge in Centrifugal Compressors; SUND003755-SUND003776;
	DTX 0301				; ASME Article: Stohlgren, The GTCP331, A 600 hp Auxiliary Power Unit Program; ;
	DTX 0302				1982; German Excerpt from Thermal Turbo Machines Vol. 2 and English translation, Traupel; SUND007972-SUND007980;
	DTX 0303				1977; German Excerpt from Thermal Turbo Machines Vol. 1 and English translation, Traupel; SUND007965-SUND007971;
	DTX 0304				12/14/1977; ASME Article: Verdonk, Vaned Diffuser Inlet Flow Conditions for a High Pressure Ratio Centrifugal Compressor; SUND003777-SUND003792;
	DTX 0305				1976; Article: Warnock, Typical Compressor Control Configurations; HSC101022-HSC101036;
	DTX 0306				1982; Excerpt from Turbocharging The International Combustion Engine: The Radial Flow Compressor, Watson; SUND006397-SUND006436;
	DTX 0307				10/00/1969; USAAVLABS Technical Report 69-56: Rundstadler, Pressure Recovery of Performance of Straight-Channel, Single-Plane Divergence Diffusers at High Mach Numbers for U.S. Army; SUND007012-SUND007504;
	DTX 0308				09/00/1967; Boeing Technical Report 67-47: Welliver, Design and Development of Small, Single-Stage Centrifugal Compressor (U); SUND007505-SUND007926;
	DTX 0309				12/25/1972; Chemical Engineering Article: White, Surge Control for Centrifugal; HSB401304-HSB401312; HSC Remand 031
	DTX 0310				03/26/1969; SAE Article: Wojciehewski, On-Board Gas Turbine APU's for Executive Aircraft; SUND005810-SUND005817;
	DTX 0311				12/00/1980; ASME Article: Yoshinaga, Aerodynamic Performance of a Centrifugal Compressor with Vaned Diffusers; SUND005818-SUND005825;

PLF. NO.	DEF. NO.	DATE OFFERED	MARKED	ADMITTED	DESCRIPTION OF EXHIBITS* AND WITNESSES
	DTX 0312				05/00/1966; Garrett Corp. Report for NASA: Perrone, Brayton Cycle 3.2 Inch Radial Compressor Performance Evaluation; SUND007989-SUND008113;
	DTX 0313				05/17/1949; U.S. Patent 2,470,565; SUND005626-SUND005629;
	DTX 0314				10/29/1957; U.S. Patent 2,811,302; ; HSC Remand 028
	DTX 0315				02/14/1961; U.S. Patent 2,971,328; ;
	DTX 0316				08/01/1961; U.S. Patent 2,994,471; HSB401104-HSB401106;
	DTX 0317				07/31/1962; U.S. Patent 3,047,210; RMDAS000150-RMDAS000159;
	DTX 0318				03/09/1966; UK Patent 1,021,797; HSB401400-HSB401405;
	DTX 0319				10/21/1969; U.S. Patent 3,473,727; SUND003548-SUND003558;
	DTX 0320				08/26/1975; U.S. Patent 3,901,620; SUND003559-SUND003564;
	DTX 0321				06/15/1976; U.S. Patent 3,936,367; SUND003565-SUND003570;
	DTX 0322				09/06/1977; U.S. Patent 4,046,490; SUND003571-SUND003579;
	DTX 0323				02/06/1979; U.S. Patent 4,137,710; SUND003580-SUND003584;
	DTX 0324				03/06/1979; U.S. Patent 4,142,838; SUND003585-SUND003592;
	DTX 0325				03/15/1979; German Patent DE 27 39 229; SUND003615-SUND003624;
	DTX 0326				05/29/1979; U.S. Patent 4,156,578; SUND003593-SUND003603;
	DTX 0327				08/07/1979; U.S. Patent 4,164,033; SUND001656-SUND001663; HSC Remand 029
	DTX 0328				08/07/1979; U.S. Patent 4,164,035; SUND001803-SUND001812;
	DTX 0329				12/11/1979; U.S. Patent 4,177,649; SUND005789-SUND005794;



PLF. NO.	DEF. NO.	DATE OFFERED	MARKED	ADMITTED	DESCRIPTION OF EXHIBITS* AND WITNESSES
	DTX 0330				05/20/1980; U.S. Patent 4,203,701; SUND003604-SUND003607 ;
	DTX 0331				06/03/1980; U.S. Patent 4,205,941; SUND003390-SUND003398;
	DTX 0332				07/08/1980; U.S. Patent Re. 30,329; SUND003399-SUND003407;
	DTX 0333				10/28/1980; U.S. Patent 4,230,437; SUND003608-SUND003614;
	DTX 0334				01/12/1982; U.S. Patent 4,309,871; SUND005795-SUND005808;
	DTX 0335				04/26/1983; U.S. Patent 4,380,893; HSB401328-HSB401337;
	DTX 0336				04/26/1983; 4,380,893 File History; HSB401406-HSB401485;
	DTX 0337				01/31/1984; U.S. Patent 4,428,194; ; HSC Remand 013
	DTX 0338				01/31/1984; 4,428,194 File History; HSB401518-HSB401583;
	DTX 0339				04/03/1987; European Patent 0212971; ;
	DTX 0340				05/05/1987; U.S. Patent 4,662,817; RMDAS000064-RMDAS000069; HSC Remand 026
	DTX 0341				11/25/2005; Online European Patent Register Search Results; ;
	DTX 0342				12/10/1999; AlliedSignal's Responses to Sundstrand's First Set of Interrogatories; ;
	DTX 0343				01/20/2000; Honeywell's Supplemental Responses to Sundstrand's First Set of Interrogatories (Nos. 2, 5, 7); ;
	DTX 0344				04/19/2000; Honeywell's Second Supplemental Responses to Sundstrand's First Set of Interrogatories (Nos. 2, 5, 6, 8, 9, 12); ;
	DTX 0345				07/03/2000; Honeywell's Responses and Objections to Defendant's Second Set of Interrogatories to Plaintiffs; ;
	DTX 0346				07/03/2000; Honeywell's Responses and Objections to Defendant's First Set of Requests to Admit to Plaintiffs; ;
	DTX 0347				07/21/2000; Honeywell's Third Supplemental Responses and Objections to Defendant's First Set of Interrogatories (Nos. 1, 5, 6, 9, 10) to Plaintiffs; ;

PLF. NO.	DEF. NO.	DATE OFFERED	MARKED	ADMITTED	DESCRIPTION OF EXHIBITS* AND WITNESSES
	DTX 0348				09/05/2000; Honeywell's Fourth Supplemental Responses and Objections to Defendant's First Set of Interrogatories (No. 1) to Plaintiffs; ;
	DTX 0349				09/07/2000; Declaration of Gerard Muller in Support of Honeywell's Responses to Sundstrand's Summary Judgment Motions Filed August 7, 2000; ; HSC Remand 006
	DTX 0350				09/07/2000; Declaration of Jim Crocker Clark in Support of Honeywell's Responses to Sundstrand's Summary Judgment Motions Filed August 7, 2000; ; HSC Remand 005
	DTX 0351				09/08/2000; Honeywell's Opposition to Hamilton Sundstrand's Motion For Summary Judgment With Regard to Infringement and Validity of Honeywell's '893 and '194 Patents; ;
	DTX 0352				01/08/2001; Honeywell International, Inc., et al. v. Hamilton Sundstrand Corp., No. 99-309-GMS, 2001 U.S. Dist. LEXIS 2155 (Del. January 8, 2001); ;
	DTX 0353				02/05/2001-02/16/2001; 2001 Trial transcript, vols. 1-10; ;
	DTX 0354				02/20/2001; Judgment and Special Verdict Form; ;
	DTX 0355				05/07/2001; Honeywell's Opposition to Hamilton Sundstrand's Brief in Support of Motions For Judgment As A Matter of Law And For A New Trial on Issues Pertaining to Liability; ;
	DTX 0356				09/27/2001; Honeywell International, Inc., et al. v. Hamilton Sundstrand Corp. 166 F. Supp. 2d 1008 (Del. 2001); ;
	DTX 0357				12/04/2001; U.S. Court of Appeals, Fed. Cir., Brief for Plaintiffs-Appellants Honeywell; ;
	DTX 0358				03/22/2002; U.S. Court of Appeals, Fed. Cir., Reply Brief for Plaintiffs-Appellants Honeywell; ;
	DTX 0359				05/02/2004; Honeywell International, Inc., et al. v. Hamilton Sundstrand Corp. 370 F.3d 1131 (Fed. Cir. 2004); ;
	DTX 0360				08/29/2005; Hearing transcript; ;
	DTX 0361				10/03/2005; Honeywell's Responses to Sundstrand's First Set of Interrogatories; ; HSC Remand 004
	DTX 0362				10/11/2005; Defendant's Notice of 30(b)(6) Deposition; ; HSC Remand 001
	DTX 0363				10/17/2005; Honeywell's Responses to Sundstrand's First Set of Requests For Admission; ;
	DTX 0364				10/28/2005; Honeywell's Notice of 30(b)(6) Deposition; ; HWL Remand 001
	DTX 0365				11/08/2005; Defendant's Notice of 30(b)(6) deposition; ; HSC Remand 002

PLF. NO.	DEF. NO.	DATE OFFERED	MARKED	ADMITTED	DESCRIPTION OF EXHIBITS* AND WITNESSES
	DTX 0366				11/23/2005; Honeywell's Responses to Sundstrand's Second Set of Interrogatories; ;
	DTX 0367				12/02/2005; Honeywell's Objections and First Supplemental Response to Sundstrand's Interrogatory No. 5; ;
	DTX 0368				; Number not used; ;
	DTX 0369				; John Goolkasian Curriculum Vitae; ;
	DTX 0370				; David Japikse Curriculum Vitae; ;
	DTX 0371				; Handwritten drawing for single stage centrifugal compressor without variable inlet guide vanes (IGV); ; HSC Remand 035
	DTX 0372				; Handwritten drawing re: Venturi; ; HSC Remand 036
	DTX 0373				; Handwritten drawing re: diffusers; ; HSC Remand 039
	DTX 0374				02/01/2006; Honeywell's Supplemental Responses to Sundstrand's Interrogatories Nos. 2-6; ;
	DTX 0375				08/07/1979; Figure 1 from U.S. Patent 4,164,033 re: Air Flow Rate; ; HSC Remand 003
	DTX 0376				2002; Excerpt from Janes Aircraft Recognition Guide, Endres & Gething; ;
	DTX 0377				2003; Excerpt from Civil Aircraft 2003/2004, Frawley; ;
	DTX 0378				; L-1011 Production List; ;
	DTX 0379				08/04/1992; Sundstrand Engineering Specification APS 3200 ECB Requirements Revision E; HSA122904-HSA123045;
	DTX 0380				05/23/1995; Sundstrand Engineering Specification APS 3200 ECB Requirements Revision M; HSA123728-HSA123914;
	DTX 0381				; Citation sheet re: Fluid Mechanics Analysis of High-Pressure Ratio Centrifugal Compressor Data; ;
	DTX 0382				; Handwritten flow chart: Evolution of GTCP331-350 Hydraulic Surge Control System up to April 1989; RMDAS000632;
	DTX 0383				; Handwritten AlliedSignal presentation: Surge Control Development Activities in Raunheim; RMDAS000488-RMDAS000497;

PLF. NO.	DEF. NO.	DATE OFFERED	MARKED	ADMITTED	DESCRIPTION OF EXHIBITS* AND WITNESSES
	DTX 0384				11/00/1987; AlliedSignal Presentation re: Surge Control Study for GTCP331-350/Boeing 767-400 ; AS103031-AS103086;
	DTX 0385				; Demonstratives on foreseeability; ;
	DTX 0386				; Demonstratives on tangential relationship; ;
	DTX 0387				; Demonstratives on other reasons; ;
	DTX 0388				; Demonstratives relating to testimony of John Goolkasian; ;
	DTX 0389				; Demonstratives relating to testimony of David Japikse; ;
	DTX 0390				; Demonstratives on background of compressors, diffusers and surge control; ;
	DTX 0391				; Demonstratives relating to L1011 surge control system; ;
	DTX 0392				; Demonstratives relating to APS 3200 surge control system; ;
	DTX 0393				; www.utc.com; ;
	DTX 0394				; www.honeywell.com; ;
	DTX 0395				; Demonstratives for opening statement; ;
	DTX 0396				; Demonstratives for closing argument; ;
	DTX 0397				; Other demonstratives; ;
	DTX 0398				; All exhibits not previously listed that are referred to in deposition testimony designated by HSC; ;
	DTX 0399				; L1011 diffuser; ;
	DTX 0400				; APS 3200 APU diffuser; ;



**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

HONEYWELL INTERNATIONAL INC. and  
HONEYWELL INTELLECTUAL PROPERTIES INC.,

Plaintiffs,

v.

HAMILTON SUNDSTRAND CORPORATION,

Defendant.

Case No.: 99-309 (GMS)

**FINAL PRETRIAL ORDER  
EXHIBIT 7**

**HONEYWELL'S OBJECTIONS TO  
HAMILTON SUNDSTRAND'S EXHIBITS**

Honeywell reserves its right to object to any exhibits added by Hamilton Sundstrand prior to the conclusion of the trial in this matter.

EXHIBIT NOS.	OBJECTIONS
DTX 101.	
DTX 102.	
DTX 103.	
DTX 104.	402; 403; 802
DTX 105.	403
DTX 106.	403
DTX 107.	802
DTX 108.	802
DTX 109.	106; 402; 403; 802
DTX 110.	802
DTX 111.	402; 802
DTX 112.	402; 403
DTX 113.	
DTX 114.	106; 402; 403; 802; FRCP 37(c)(1)
DTX 115.	
DTX 116.	106; 402; 403; 802; FRCP 37(c)(1); 901
DTX 117.	106; 402; 403; 802; FRCP 37(c)(1)
DTX 118.	106; 402; 403; 802; FRCP 37(c)(1)
DTX 119.	106; 402; 403; 802; FRCP 37(c)(1)
DTX 120.	106; 402; 403; 802; FRCP 37(c)(1)
DTX 121.	106; 402; 403; 802; FRCP 37(c)(1)
DTX 122.	
DTX 123.	

EXHIBIT NOS.	OBJECTIONS
DTX 124.	
DTX 125.	
DTX 126.	
DTX 127.	
DTX 128.	
DTX 129.	
DTX 130.	
DTX 131.	
DTX 132.	
DTX 133.	
DTX 134.	
DTX 135.	
DTX 136.	
DTX 137.	
DTX 138.	
DTX 139.	
DTX 140.	
DTX 141.	
DTX 142.	
DTX 143.	
DTX 144.	
DTX 145.	
DTX 146.	



EXHIBIT NOS.	OBJECTIONS
DTX 147.	
DTX 148.	
DTX 149.	
DTX 150.	
DTX 151.	
DTX 152.	
DTX 153.	
DTX 154.	
DTX 155.	
DTX 156.	
DTX 157.	
DTX 158.	
DTX 159.	
DTX 160.	
DTX 161.	
DTX 162.	
DTX 163.	
DTX 164.	
DTX 165.	
DTX 166.	
DTX 167.	
DTX 168.	
DTX 169.	

EXHIBIT NOS.	OBJECTIONS
DTX 170.	403; 802
DTX 171.	
DTX 172.	
DTX 173.	
DTX 174.	
DTX 175.	
DTX 176.	
DTX 177.	
DTX 178.	
DTX 179.	
DTX 180.	
DTX 181.	
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DTX 186.	
DTX 187.	
DTX 188.	
DTX 189.	
DTX 190.	
DTX 191.	
DTX 192.	

EXHIBIT NOS.	OBJECTIONS
DTX 193.	
DTX 194.	
DTX 195.	
DTX 196.	
DTX 197.	
DTX 198.	
DTX 199.	
DTX 200.	
DTX 201.	
DTX 202.	
DTX 203.	
DTX 204.	
DTX 205.	901
DTX 206.	402
DTX 207.	402
DTX 208.	402
DTX 209.	402
DTX 210.	402
DTX 211.	
DTX 212.	402
DTX 213.	402
DTX 214.	402
DTX 215.	

EXHIBIT NOS.	OBJECTIONS
DTX 216.	
DTX 217.	
DTX 218.	
DTX 219.	106
DTX 220.	106; FRCP 37(c)(1)
DTX 221.	106
DTX 222.	
DTX 223.	402
DTX 224.	
DTX 225.	
DTX 226.	
DTX 227.	
DTX 228.	
DTX 229.	
DTX 230.	
DTX 231.	
DTX 232.	106
DTX 233.	
DTX 234.	
DTX 235.	
DTX 236.	
DTX 237.	402
DTX 238.	

EXHIBIT NOS.	OBJECTIONS
DTX 239.	
DTX 240.	106
DTX 241.	106; 402
DTX 242.	106
DTX 243.	
DTX 244.	
DTX 245.	
DTX 246.	
DTX 247.	
DTX 248.	
DTX 249.	
DTX 250.	
DTX 251.	
DTX 252.	
DTX 253.	402; 403; FRCP 37(c)(1)
DTX 254.	402; 403; FRCP 37(c)(1)
DTX 255.	402; 403; FRCP 37(c)(1)
DTX 256.	402; 403; FRCP 37(c)(1)
DTX 257.	
DTX 258.	
DTX 259.	
DTX 260.	
DTX 261.	

EXHIBIT NOS.	OBJECTIONS
DTX 262.	
DTX 263.	
DTX 264.	
DTX 265.	
DTX 266.	
DTX 267.	
DTX 268.	
DTX 269.	
DTX 270.	106
DTX 271.	
DTX 272.	106
DTX 273.	
DTX 274.	
DTX 275.	
DTX 276.	
DTX 277.	106
DTX 278.	
DTX 279.	106
DTX 280.	
DTX 281.	
DTX 282.	
DTX 283.	
DTX 284.	

EXHIBIT NOS.	OBJECTIONS
DTX 285.	
DTX 286.	106; 402
DTX 287.	
DTX 288.	
DTX 289.	
DTX 290.	106
DTX 291.	106; 402
DTX 292.	106
DTX 293.	106
DTX 294.	106
DTX 295.	
DTX 296.	
DTX 297.	106
DTX 298.	
DTX 299.	106
DTX 300.	
DTX 301.	FRCP 37(c)(1)
DTX 302.	106
DTX 303.	106
DTX 304.	
DTX 305.	
DTX 306.	106
DTX 307.	

EXHIBIT NOS.	OBJECTIONS
DTX 308.	
DTX 309.	
DTX 310.	
DTX 311.	
DTX 312.	
DTX 313.	
DTX 314.	
DTX 315.	FRCP 37(c)(1)
DTX 316.	
DTX 317.	
DTX 318.	
DTX 319.	
DTX 320.	
DTX 321.	
DTX 322.	
DTX 323.	
DTX 324.	
DTX 325.	
DTX 326.	
DTX 327.	
DTX 328.	
DTX 329.	
DTX 330.	



EXHIBIT NOS.	OBJECTIONS
DTX 331.	
DTX 332.	
DTX 333.	
DTX 334.	
DTX 335.	
DTX 336.	
DTX 337.	
DTX 338.	
DTX 339.	402; FRCP 37(c)(1)
DTX 340.	402
DTX 341.	402; FRCP 37(c)(1)
DTX 342.	
DTX 343.	
DTX 344.	
DTX 345.	
DTX 346.	
DTX 347.	
DTX 348.	
DTX 349.	802
DTX 350.	802
DTX 351.	Record Material: Not A Proper Exhibit
DTX 352.	Record Material: Not A Proper Exhibit
DTX 353.	Record Material: Not A Proper Exhibit

<b>EXHIBIT NOS.</b>	<b>OBJECTIONS</b>
DTX 354.	Record Material: Not A Proper Exhibit
DTX 355.	Record Material: Not A Proper Exhibit
DTX 356.	Record Material: Not A Proper Exhibit
DTX 357.	Record Material: Not A Proper Exhibit
DTX 358.	Record Material: Not A Proper Exhibit
DTX 359.	Record Material: Not A Proper Exhibit
DTX 360.	Record Material: Not A Proper Exhibit
DTX 361.	
DTX 362.	Record Material: Not A Proper Exhibit
DTX 363.	
DTX 364.	Record Material: Not A Proper Exhibit
DTX 365.	Record Material: Not A Proper Exhibit
DTX 366.	
DTX 367.	
DTX 368.	
DTX 369.	802
DTX 370.	802
DTX 371.	403; 901
DTX 372.	403; 901
DTX 373.	403; 901
DTX 374.	
DTX 375.	106
DTX 376.	

EXHIBIT NOS.	OBJECTIONS
DTX 377.	
DTX 378.	
DTX 379.	
DTX 380.	
DTX 381.	106; 402; FRCP 37(c)(1)
DTX 382.	402
DTX 383.	402
DTX 384.	402
DTX 385.	
DTX 386.	
DTX 387.	
DTX 388.	
DTX 389.	
DTX 390.	
DTX 391.	
DTX 392.	
DTX 393.	
DTX 394.	
DTX 395.	
DTX 396.	
DTX 397.	402; 403
DTX 398.	402; 403
DTX 399.	901

EXHIBIT NOS.	OBJECTIONS
DTX 400.	901

# EXHIBIT 8

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

HONEYWELL INTERNATIONAL INC.  
and HONEYWELL INTELLECTUAL  
PROPERTIES INC.

Plaintiffs,

v.

HAMILTON SUNDSTRAND CORP.,

Defendant.

**C.A. No. 99-309-GMS**

**FINAL PRETRIAL ORDER  
EXHIBIT 8**

**HONEYWELL'S LIST OF TRIAL WITNESSES**

Honeywell identifies the following fact witnesses whom it currently intends to call at trial, either live, by transcript or by video deposition, in its case-in-chief or in rebuttal:

<b>WITNESS</b>	<b>ADDRESS</b>
Jim Clark	Care of Counsel for Honeywell
Richard Konneker	Care of Counsel for Honeywell

Honeywell identifies the following expert witnesses whom it currently intends to call at trial, either live, by transcript or by video deposition, in its case-in-chief or in rebuttal:

<b>WITNESS</b>	<b>ADDRESS</b>
Melvin Garner	Care of Counsel for Honeywell
Gerard Muller	Care of Counsel for Honeywell

Honeywell identifies the following fact witnesses whom it currently believes it that it *may* call at trial, either live, by transcript or by video deposition, in its case-in-chief or in rebuttal:

<b>WITNESS</b>	<b>ADDRESS</b>
Richard Brown	Care of Counsel for Sundstrand
Milton Adams	Care of Counsel for Honeywell
Albert Ducrocq	Care of Counsel for Sundstrand
Edward Edelman	Care of Counsel for Sundstrand
Alan Gruebel	Care of Counsel for Sundstrand
Mark Harris	Care of Counsel for Sundstrand
Kenneth Henry	Care of Counsel for Honeywell
Stephen LaCroix	Care of Counsel for Honeywell
Richard Stokes	Care of Counsel for Honeywell
Peter Suttie	Care of Counsel for Sundstrand
John Szillat	Care of Counsel for Sundstrand
James Timm	Care of Counsel for Honeywell

Honeywell identifies the following expert witnesses whom it currently believes that it *may* call at trial, either live, by transcript or by video deposition, in its case-in-chief or in rebuttal:

<b>WITNESS</b>	<b>ADDRESS</b>
John Goolkasian	Care of Counsel for Sundstrand
David Japikse	Care of Counsel for Sundstrand
Francis Shinskey	Care of Counsel for Sundstrand

Honeywell reserves all of its rights to call any witness on Sundstrand's list of trial witnesses, to call additional witnesses as part of its rebuttal case, to call any witnesses necessary to authenticate any disputed documents and to supplement and/or amend this list pursuant to the terms of the Final Pretrial Order.

# EXHIBIT 9



**HONEYWELL v. HSC**  
**FINAL PRE-TRIAL ORDER EXHIBIT 9**

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

**HONEYWELL INTERNATIONAL INC. and  
HONEYWELL INTELLECTUAL  
PROPERTIES INC.,**

**Plaintiffs,**

**V.**

**HAMILTON SUNDSTRAND CORP.,**

**Defendant.**

**Civil Action No. 99-309-GMS**

## Exhibit 9

## HAMILTON SUNDTRAND'S LIST OF WITNESSES

Hamilton Sundstrand identifies the following fact witnesses whom it currently intends to call at trial, either live, by transcript or video deposition, in its case-in-chief or in rebuttal:

WITNESS	ADDRESS
Richard Brown	Care of Counsel for Hamilton Sundstrand
James Clark	Care of Counsel for Honeywell
Mark Harris	Care of Counsel for Hamilton Sundstrand
Peter Suttie	Care of Counsel for Hamilton Sundstrand

Hamilton Sundstrand identifies the following expert witnesses whom it currently intends to call at trial, either live, by transcript or video deposition, in its case-in-chief or in rebuttal:

<b>WITNESS</b>	<b>ADDRESS</b>
Dr. David Japikse	Care of Counsel for Hamilton Sundstrand
John Goolkasian *	Care of Counsel for Hamilton Sundstrand

Hamilton Sundstrand identifies the following fact witnesses whom it *may* call at trial, either live, by transcript or video deposition, in its case-in-chief or in rebuttal:

<b>WITNESS</b>	<b>ADDRESS</b>
Milton Adams	Care of Counsel for Honeywell
Shauna Barkley	Care of Counsel for Honeywell
Edward Edelman	Care of Counsel for Hamilton Sundstrand
Richard Emmons	Care of Counsel for Hamilton Sundstrand
Dennis Faulkner	Care of Counsel for Hamilton Sundstrand
Ed Goff	Phoenix, AZ
Alan Greubel	San Diego, CA
Kurt Kenzler	Care of Counsel for Honeywell
Stephen R. LaCroix	Care of Counsel for Honeywell
Eric Moon	Care of Counsel for Honeywell
Richard F. Stokes	Care of Counsel for Honeywell
John Szillat	Care of Counsel for Hamilton Sundstrand
Robert Telakowski	Care of Counsel for Hamilton Sundstrand
Robert Thompson	Care of Counsel for Hamilton Sundstrand
James Timm	Care of Counsel for Honeywell

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\*HSC does not believe that testimony from patent lawyer experts is proper in this Festo analysis. Accordingly, HSC is filing a motion in limine to preclude such testimony. HSC intends to call Mr. Goolkasian (or Mr. Garner) only if the Court denies HSC's motion and allows Honeywell's patent lawyer expert to testify.

Hamilton Sundstrand identifies the following expert witnesses it *may* call at trial, either live, by transcript or video deposition, in its case-in-chief or in rebuttal:

<b>WITNESS</b>	<b>ADDRESS</b>
Francis Shinskey	Care of Counsel for Hamilton Sundstrand
Melvin Garner*	Care of Counsel for Honeywell
Gerard Muller	Care of Counsel for Honeywell

In addition, Hamilton Sundstrand reserves all its rights to call any witness on Honeywell's trial witness list, to call additional witnesses as part of its rebuttal case, to call any witnesses necessary to authenticate any disputed documents or to translate foreign documents and to supplement and/or amend this list pursuant to the terms of the Final Pretrial Order.

# EXHIBIT 10

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

HONEYWELL INTERNATIONAL INC.  
and HONEYWELL INTELLECTUAL  
PROPERTIES INC.

Plaintiffs,

v.

HAMILTON SUNDSTRAND CORP.,

Defendant.

**C.A. No. 99-309-GMS**

**FINAL PRETRIAL ORDER  
EXHIBIT 10**

**HONEYWELL'S EXPERT WITNESSES**

Honeywell intends to call the following expert witnesses at trial:

A. Gerard Muller

1. Statement of Qualifications

Gerard Muller is an expert in the design and application of gas turbine engines and compressors and control systems for such devices. In his 40 years of experience, Mr. Muller has had direct responsibility for designing gas turbine engines used in aircraft and in applications for powering compressors and generators. Mr. Muller has also provided consulting services related to air compressors and gas turbine engines used in aviation and compressor drive applications. He has Bachelor and Master of Science degrees in Mechanical Engineering and is a Registered Professional Engineer in the State of New Jersey.

Mr. Muller is currently the President and owner of Serry-Tech, Inc., which provides consulting and training services in the areas of turbine and compressor technology. He has been the president and owner of Serry-Tech since 1986. Before founding Serry-Tech, Mr. Muller was employed by Exxon Research and Engineering Company, where he worked during the 1970s through the mid-1980s. As an engineer at Exxon, Mr. Muller evaluated gas turbines, generators and compressors and their control systems. Mr. Muller was also employed as an

engineer at Pratt & Whitney Aircraft, a manufacturer of gas turbines for civilian and military applications. There, he designed gas turbines used in aircraft and for industrial applications and high speed, gas turbine powered generators for space power applications. Throughout his career, Mr. Muller has been involved in the evaluation of control systems for compressors, generators and gas turbines such as those used in auxiliary power units (“APUs”).

2. Subject Matter of Testimony

Mr. Muller will provide testimony on the state of compressor, diffuser and surge control technology in the 1982-83 time frame. Mr. Muller will also testify about the load compressor and surge control systems of the APS 3200 APU and other Honeywell and HSC APUs. In addition, Mr. Muller will testify that Sundstrand’s use of Honeywell’s patented technology in the APS 3200 APU would have been unforeseeable in the 1982-83 time frame.

Mr. Muller’s expected testimony is set forth more fully in his December 15, 2005 and January 20, 2006 Expert Reports and the exhibits attached thereto, as well as in his January 25, 2006 deposition testimony. Mr. Muller reserves the right to supplement or update his opinions prior to testifying should additional information become available.

B. Melvin Garner

1. Statement of Qualifications

Melvin Garner is a Principal at the law firm of Darby & Darby P.C. where he provides advice on the practice and procedures of the United States Patent and Trademark Office (“PTO”), actively practices in all phases of prosecution of patent applications before the PTO, and renders opinions on the validity and infringement of patents.

Mr. Garner has over 33 years of experience working as a patent attorney at the firms of Brumbaugh, Graves, Donohue & Raymond (now part of Baker & Botts) and Darby & Darby P.C. While in law school, Mr. Garner was employed as a Member of Patent Staff at Bell Telephone Laboratories (now Lucent Technologies, Inc.) and became a Patent Agent registered to practice before the PTO in 1972. During his career, Mr. Garner has prosecuted or supervised the prosecution of thousands of patent applications. Mr. Garner was President of the New York Intellectual Property Law Association, 2003-2004, and is currently the President of the American

Intellectual Property Law Association.

2. Subject Matter of Testimony

Mr. Garner will provide expert testimony regarding the prosecution before the PTO of claims 8 and 19 of U.S. Patent No. 4,380,893 (the “893 patent”) and claim 4 of U.S. Patent No. 4,428,194 (the “194 patent”). Mr. Garner will also provide expert testimony about PTO practices and about the reasonable beliefs and actions of an attorney practicing before the PTO in 1982-83. In particular, Mr. Garner will testify that the amendments to those claims during prosecution concerning the operation of the control device as a function of the position of the inlet guide vanes (a) could not have foreseeably been written to cover the APS 3200 APU surge control system and (b) bore no more than a tangential relation to the APS 3200 APU surge control system. Mr. Garner will also testify that there were other reason that the patentee could not reasonably have been expected to have described the APS 3200 APU surge control system.

Mr. Garner’s expected testimony is set forth more fully in his December 15, 2005 Expert Report and the exhibits attached thereto, as well as in his January 26, 2006 deposition testimony. Mr. Garner reserves the right to supplement or update his opinions prior to testifying should additional information become available.

# EXHIBIT 11



**HONEYWELL v. HSC**  
**FINAL PRE-TRIAL ORDER EXHIBIT 11**

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

**HONEYWELL INTERNATIONAL INC. and  
HONEYWELL INTELLECTUAL  
PROPERTIES INC.,**

**Plaintiffs,**

**V.**

**HAMILTON SUNDSTRAND CORP.,**

**Defendant.**

**Civil Action No. 99-309-GMS**

## Exhibit 11

## HAMILTON SUNDSTRAND EXPERT WITNESSES

Hamilton Sundstrand intends to call the following expert witnesses at trial:

### A. Dr. David Japikse

## 1. Statement of Qualifications

Dr. David Japikse is Chairman and CEO of Concepts NREC, a leading independent, full-service turbomachinery design and development organization headquartered in Wilder, VT. Concepts NREC provides manufacturers, government agencies, and members of the engineering community with technology tools, services, and products to develop and produce advanced turbomachinery products. Dr. Japikse holds a Ph.D. in Mechanical Engineering from Purdue University, and has more than 35 years of work experience in the design, development and modeling of centrifugal compressors and radial and axial turbines. Dr. Japikse holds multiple

patents in the area of compressor technology. He has authored multiple textbooks and dozens of publications relating to compressor technology. For his work in the field of compressor technology, he has been honored as a Member of the National Academy of Engineering, and was a recipient of the James H. Potter award from the American Society of Mechanical Engineers (ASME) for achievement in power engineering including teaching, writing and practice.

## **2. Subject Matter of Testimony**

Dr. Japikse will testify regarding the state of compressor, diffuser and surge control technologies as of 1982/1983. Dr. Japikse will also testify regarding the surge control system employed by the accused APS 3200 APU, as well as the surge control system employed by the APU for the L1011. Further, Dr. Japikse will testify that the aspects of the surge control system for the APS 3200 APU alleged to be the equivalent to the IGV Limitation were known and foreseeable as of the relevant amendment dates of October 25, 1982 and August 30, 1983.

Dr. Japikse's expected testimony is set forth more fully in his January 12 and January 24, 2006 Expert Reports and the exhibits attached thereto, as well as in his January 27, 2006 deposition testimony. Dr. Japikse reserves the right to supplement or update his opinions prior to testifying should additional information become available.

## **B. John Goolkasian\***

### **1. Statement of Qualifications**

John Goolkasian is a patent attorney who advises clients on the practice and policies of the Patent and Trademark Office. Prior to starting his own practice in 2005, he was a partner at the Oblon law firm in Alexandria, Virginia, for over eleven years, where he advised clients on

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\* HSC does not believe that testimony from patent lawyer experts is proper in this *Festo* analysis. Accordingly, HSC is filing a motion in limine to preclude such testimony. HSC intends to call Mr. Goolkasian (or Mr. Garner) only if the Court denies HSC's motion and allows Honeywell's patent lawyer expert to testify.

patent issues, drafted patent opinion letters, and prosecuted patents before the Patent and Trademark Office. He previously worked for 25 years at the Patent and Trademark Office, including ten years as an Examiner-in-Chief and Administrative Patent Judge on the Board of Patent Appeals and Interferences.

## **2. Subject Matter of Testimony**

As set forth in HSC's Motion *In Limine* to Preclude the Testimony of Honeywell's Patent Lawyer Expert Melvin Garner, HSC does not believe that the Court should permit patent lawyer expert testimony in this matter.

Should Mr. Garner be permitted to testify, Mr. Goolkasian would provide testimony in rebuttal. Mr. Goolkasian would offer testimony concerning Honeywell's effort to rebut the *Festo* presumption of surrender, including testimony that: (1) it was not unforeseeable to a reasonable patent lawyer in 1982 to draft a claim that covered the alleged equivalent in this case; (2) there was more than a tangential relationship between the reason for amending the claims and the alleged equivalent; and (3) there is no other reason that prosecution history estoppel should not apply. In addition, Mr. Goolkasian would provide testimony rebutting other opinions that Mr. Garner may offer.

Mr. Goolkasian's expected testimony is set forth more fully in his January 12, 2006 Expert Report and the exhibits attached thereto, as well as in his January 27, 2006 deposition testimony. Mr. Goolkasian reserves the right to supplement or update his opinions prior to testifying should additional information become available.

# EXHIBIT 16

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

HONEYWELL INTERNATIONAL INC.  
and HONEYWELL INTELLECTUAL  
PROPERTIES INC.

Plaintiffs,

v.

HAMILTON SUNDSTRAND CORP.,

Defendant.

**C.A. No. 99-309-GMS**

**FINAL PRETRIAL ORDER  
EXHIBIT 16**

**WAIVER OF CLAIMS AND DEFENSES ABANDONED BY DEFENDANT HAMILTON  
SUNDSTRAND CORPORATION**

Pursuant to Rule 12 of the Federal Rules of Civil Procedure, Hamilton Sundstrand has waived the following defenses: (1) lack of jurisdiction over the person; (2) improper venue; (3) insufficiency of process; and (4) insufficiency of service of process. In addition, Hamilton Sundstrand has waived all other claims and defenses that it has not specifically alleged in accordance with the Federal Rules of Civil Procedure.

# EXHIBIT 17

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

HONEYWELL INTERNATIONAL INC.  
and HONEYWELL INTELLECTUAL  
PROPERTIES INC.

Plaintiffs,

v.

HAMILTON SUNDSTRAND CORP.,

Defendant.

**C.A. No. 99-309-GMS**

**FINAL PRETRIAL ORDER  
EXHIBIT 17**

**HONEYWELL'S PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW**

Honeywell respectfully submits these Proposed Findings of Fact and Conclusions of Law. Honeywell reserves the right to supplement these Proposed Findings of Fact and Conclusions of Law after the close of evidence.

**FINDINGS OF FACT**

**Background**

1. Honeywell is a diversified technology company that sells aerospace products; control technologies for buildings, homes and industry; automotive products; power generation systems; specialty chemicals; fibers; plastics and advanced materials. *See* February 2001 Trial Transcript at 315-317.

2. The Honeywell Aerospace business is a leading provider of integrated avionics, engines and components for aircraft. *Id.*

3. Defendant Hamilton Sundstrand manufactures and markets aerospace and industrial products. *Id.* at 1239-1240.

4. Sundstrand's aerospace business provides system components and services for the commercial and military aerospace industries. *Id.*

5. An auxiliary power unit or "APU" is a gas turbine engine, typically located in the tail section of large commercial aircraft, used to supply compressed air and electrical power to the aircraft before the main engines are started, such as when the aircraft is parked at the gate. *Id.* at 569-570.

6. An APU utilizes a load compressor to draw in ambient air, compress that air, and supply the appropriate amount of compressed air for the aircraft's varying demands. *Id.* at 570.

7. Because the aircraft's need for compressed air can vary greatly over short periods of time, there is a risk of flow instability, or surge. *Id.* at 588-592.

8. Surge occurs when there is insufficient airflow through the load compressor, preventing air from exiting the compressor and instead causing it to reverse direction and surge back. *Id.*

9. The Honeywell patents relate to a system and method for controlling surge in APUs. *See* PTX 1001, 1002.

#### **Prosecution History**

10. The two Honeywell patents-in-suit, U.S. Patent Nos. 4,380,893 ("the '893 patent") and 4,428,194 ("the '194 patent"), derive from a common patent application, filed February 19, 1981. PTX 1001, 1002.



11. The patents were separated into two distinct applications during prosecution, with the '893 patent containing only apparatus claims and the '194 patent containing only method claims. PTX 1003 at HSB401563-64.

12. The three independent claims at issue at trial, independent claim 4 of the '194 patent and independent claims 8 and 19 of the '893 patent, appeared in the original patent applications as dependent application claims 51, 17 and 35, respectively. In each case, the claims on which they originally depended (application claims 48, 16, and 32, respectively) recited a surge control system featuring a flow-related parameter that was subject to proportional and integral control. PTX 1003 at HSB401556; PTX 1004 at HSB401434, HSB401439-40.

13. Proposed independent claims 16, 32 and 48 were rejected by the Examiner under 35 U.S.C. § 103 as being unpatentable in view of the prior art. PTX 1003 at HSB401567; PTX 1004 at HSB401456-57.

14. In particular, the Examiner cited the Shell, Rateau, and Metot patents as disclosing a surge control system for a gas turbine with P and  $\Delta P$  sensors and proportional and integral control. PTX 1003 at HSB401567; PTX 1004 at HSB401456-57.

15. The Examiner relied primarily on the Shell prior art, a 1966 patent from the Netherlands. PTX 1069.

16. The Shell patent claims a method for controlling surge in gas compressors independently of the pressure level at which the compressor operates. PTX 1069 at 2:61-64.

17. The Examiner found that Shell discloses a compressor control system including a surge control valve, P and  $\Delta P$  sensors, a dividing circuit and a controller. PTX 1003 at HSB401566; PTX 1004 at HSB401456-57.

18. The Examiner further found that the Shell patent's controller compares the quotient from the circuit with a set point using both proportional and integral control. PTX 1003 at HSB401566; PTX 1004 at HSB401456-57.

19. The Examiner noted that unlike the proposed independent claims, which vented the air from the surge control outlet to the atmosphere, the surge control outlet described in the Shell patent recycles air to the compressor inlet. PTX 1003 at HSB401566; PTX 1004 at HSB401456-57.

20. The Examiner found that the provision for dumping instead of recycling air in a surge control system was also well known in the art, as evidenced by the Rateau and Metot patents. PTX 1003 at HSB401566; PTX 1004 at HSB401456-57.

21. The Rateau reference is a 1913 U.S. patent, No. 1,052,172, describing an early surge control valve for "fluid-impelling apparatus." PTX 1015.

22. The Metot reference is also a U.S. Patent, No. 3,411,702 from 1968, claiming a control system to maintain a constant discharge gas pressure. PTX 1006.

23. The Examiner combined the Shell, Rateau and Metot prior art references to reject Honeywell's application claims 16, 32, and 48 as obvious and thus unpatentable under 35 U.S.C § 103. PTX 1003 at HSB401567-568; PTX 1004 at HSB401456-57.

24. Because application claims 16 and 48 contained the additional limitation that the surge control system operate in conjunction with a “gas turbine engine,” the Examiner also relied upon the Lewis prior art reference, U.S. Patent No. 2,994,471, in combination with Shell, Rateau and Metot, to find claims 16 and 48 obvious under 35 U.S.C. § 103. PTX 1003 at HSB401567; PTX 1004 at HSB401457.

25. The Lewis patent discloses a gas turbine engine that serves as an air compressor. PTX 1007.

26. None of the Shell, Rateau or Metot patents makes any mention of inlet guide vane use, and there is no suggestion in any of the three patents that inlet guide vanes are used as part of the surge control system. PTX 1069, 1015, 1006.

27. In its responses to Honeywell’s Requests for Admission during the recent remand discovery, Sundstrand admitted “that during the prosecution of the Patents-in-Suit, the Examiner did not reference any Prior Art that disclosed inlet guide vanes or the use of their position as part of a surge control system.” PTX 1021 at No. 5.

28. At the same time that the Examiner rejected application claims 16, 32 and 48, he merely “objected to” application claims 17, 35, and 51, which had been dependent on those claims. PTX 1003, 1004.

29. According to the Patent Office’s Manual of Patent Examining Procedure applicable in 1982-83, the “objection” to certain claims during prosecution meant that “the form of the claim (as distinguished from its substance) is improper.” PTX 1160 at Section 706.01 (parenthetical in original).

30. The Examiner indicated that application claims 17, 35 and 51 “will be allowed if rewritten in independent form.” In making this statement, the Examiner did not attach any significance to, or even mention, the fact that each of those claims included, among other additional elements, the use of inlet guide vane position. PTX 1003 at HSB401567; PTX 1004 at HSB401458.

31. A number of the claims allowed by the Examiner during the same office action did not include any use of inlet guide vane position. *See, e.g.*, Claims 1, 6, 17 and 18 of the ‘893 Patent (PTX 1002); *see also* PTX 1004 at HSB401458 (finding application claims 4, 14, 30 and 33, which correspond to the issued claims just listed, allowable).

32. In response, Honeywell cancelled application claims 16, 32 and 48 and rewrote application claims 17, 35 and 51 in independent form. PTX 1003 at HSB401570; PTX 1004 at HSB401461.

33. According to the Federal Circuit opinion in this case, this action by Honeywell constituted a narrowing amendment, thus giving rise to the *Festo* presumption. *See* 370 F.3d at 1141-44. In other words, the narrowing amendments at issue consisted of the addition of the limitations found in the original independent claims to those in the original dependent claims and the cancellation of the independent claims. According to the court, this was the same as narrowing the independent claims to include the limitations of the dependent claims. *See id.*

34. In rewriting application claim 17 from dependent to independent form, Honeywell effectively added to the elements of original independent claim 16 four limitations, each of which had been found in original application claim 17: 1) a flow-related parameter whose value is “substantially independent of the temperature of the compressed air;” 2) a comparator means

having an “adjustable control set point representing said desired value of said parameter;” and 3) a “reset signal for varying said set point as a function of the position of said inlet guide vanes” 4) “in accordance with a predetermined reset schedule.” PTX 1004 at HSB401466-67.

35. Similarly, in amending original application claim 35 and rewriting it from dependent to independent form, Honeywell effectively added to the elements of independent claim 32 four limitations, each of which had been found in original application claim 35: 1) “a guide vane position sensor;” and 2) “a function generator;” 3) “coupled in series;” 4) “between the inlet guide vanes and said input portion of said comparator.” PTX 1004 at HSB401472.

36. Finally, in amending original application claim 51 and rewriting it from dependent to independent form, Honeywell added two elements to the limitations that had been found in original independent application claim 48: 1) “adjustable inlet guide vanes;” and 2) a control system that “adjust[s] the relationship between the magnitudes of said integral and proportional control signals and the magnitudes of said parameter variations as a function of the position of the inlet guide vanes.” PTX 1003 at HSB401573.

37. The rewritten claims then issued without further examination. Specifically, application claims 17 and 35 issued as claims 8 and 19 of the ‘893 patent on April 26, 1983, and application claim 51 issued as claim 4 of the ‘194 patent on January 31, 1984. PTX 1001, 1002.

### **The Sundstrand APS 3200 Surge Control System**

38. At trial in February 2001, the jury found that the surge control system of the APS 3200 APU infringed the asserted claims of the ‘893 and ‘194 patents, including independent claims 8, 19 and 4, under the doctrine of equivalents. *See* Special Verdict Form.

39. In the initial proceedings in this matter, Sundstrand conceded that the APS 3200 uses a “closed-loop [surge] control system” that is “based on comparing the sensed value of a parameter to a desired set point for that same parameter.” PTX 1018 (August 3, 2000 Declaration of Peter Suttie) at ¶ 2.

40. Sundstrand APS 3200 Program Manager Peter Suttie explained in a sworn declaration that, “[w]hile other conventional surge control systems include sensors that detect total pressures, the control logic of the APS 3200 uses only static pressure sensors to determine its flow related parameter,” a parameter denoted “DELPQP” by Sundstrand. PTX 1018 at ¶ 3.

41. In the APS 3200, DELPQP is calculated by “measuring the static pressures at two different locations within the load compressor, at the compressor outlet duct and compressor diffuser, and making a calculation involving subtracting one measurement from the other and dividing that result by the first value.” PTX 1018 at ¶ 3.

42. According to Sundstrand’s technical expert who testified at trial, Francis Shinsky, DELPQP “constitutes a unique measure of potential surge conditions within a centrifugal compressor, a measure not described elsewhere in patents or prior art.” November 10, 2000 Expert Report of Francis Shinsky at 9.

43. Sundstrand did not start developing the APS 3200 surge control system until 1989, years after the prosecution of the Honeywell patents had been completed. February 2001 Trial Transcript at 1254-55, 1257; *see also* PTX 1021 at No. 3.

44. Around 1991, during the initial development of the APS 3200, Sundstrand discovered that the DELPQP parameter used by the APS 3200 surge control system produced a

response curve that was not directly proportional to flow at all levels. Instead, “[w]hile the value of DELPQP initially rises as flow through the compressor increases, at an inflection point it peaks and thereafter actually decreases as flow further increases.” PTX 1018 at ¶ 11; PTX 1064.

45. It took Sundstrand nearly four years of failed experimental and development efforts to address and resolve the problems created by this behavior of the DELPQP variable. PTX 1018 at ¶¶ 11-14.

46. In a February 1, 1993 memo to APS 3200 project manager Suttie, for example, Sundstrand engineer Koresh Mehr-Ayin noted that while the system “is correctly interpreting the inputs as being on the left side of the curve,” “the load compressor is physically operating on the right side of the curve.” PTX 1114.

47. A memo dated several months later reiterated the need to “urgently define a better method of determining which side of the  $\Delta P/P$  curve the load compressor is operating on.” PTX 1061.

48. In November 1994, another Sundstrand memo reiterated that correctly interpreting the DELPQP flow curve remained even at that date a “critical problem” in need of resolution. PTX 1123.

49. Eventually, during the course of 1995, Sundstrand discovered that it could address the DELPQP phenomenon by employing a test that measured inlet guide vane position to determine whether the DELPQP variable was on the right or left side of the inflection point. PTX 1018 at ¶¶ 13-14.

50. The production APS 3200 surge control system, which was the subject of the February 2001 trial, used inlet guide vane position to determine whether and how to use the DELPQP flow parameter in operation of the surge control valve. PTX 1018 at ¶ 14; February 2001 Trial Transcript at 1579-80.

### **Procedural History**

51. Honeywell filed this suit in May 1999. *See* Complaint.

52. Prior to trial, Sundstrand moved for summary judgment, claiming that Honeywell should be precluded from establishing infringement under the doctrine of equivalents because of amendments it had made during prosecution of the patents-in-suit. *See* Sundstrand's Motion for Summary Judgment.

53. At the time of Sundstrand's motion, the Federal Circuit had recently issued its initial *en banc* opinion in *Festo*, which had established that prosecution history estoppel applied in the case of a narrowing amendment made for reasons related to patentability and held that such estoppel erected a complete, irrefutable bar to claims of infringement under the doctrine of equivalents. *Festo*, 172 F.3d 1361 (Fed. Cir. 1999) (*en banc*).

54. In ruling on Sundstrand's summary judgment motion, this Court reviewed the law of prosecution history estoppel as it then stood. *Honeywell Int'l Inc. v. Hamilton Sundstrand Corp.*, No. Civ.A. 99-309 GMS, 2001 WL 66348, at \*3-\*5 (D. Del. Jan. 8, 2001). The Court then indicated that it would "engage in a detailed review of the relevant prosecution history," and made various findings of fact regarding the Honeywell patent file. *Id.* at \*5.



55. Reviewing the prosecution history of the patents-in-suit, the Court found that “Honeywell did not surrender the elements at issue during the prosecution of the patents at issue,” and that “Honeywell did not give up an embodiment of the invention with the inlet guide vane.” *Id.* at \*6.

56. The Court then concluded as a matter of law that prosecution history estoppel did not apply because, in its view, there had been no narrowing amendment of the asserted claims when the formerly dependent application claims were merely rewritten in independent form. *Id.*

57. At trial in February 2001, Honeywell presented evidence that Sundstrand’s APS 3200 surge control system infringed the patents-in-suit both literally and under the doctrine of equivalents. Honeywell relied on the testimony of both its own technical expert, Gerard Muller, and that of Sundstrand’s expert, Francis Shinskey, to contend that the APS 3200 infringed the Honeywell patents. *See, e.g.* February 2001 Trial Transcript at 2545-2552.

58. After a ten-day trial before this Court, the jury found that Sundstrand willfully infringed under the doctrine of equivalents all six asserted patent claims and awarded Honeywell \$46.6 million in damages. *See* Special Verdict Form.

59. The Court affirmed the jury verdict in full in response to the parties’ post-trial motions. *Honeywell Int’l Inc. v. Hamilton Sundstrand Corp.*, 166 F. Supp. 1008 (D. Del. 2001).

60. An appeal to the Federal Circuit ensued. After the case was argued to a three-judge panel of that court in August 2002, the appellate court, *sua sponte*, ordered in February 2004 that the case would be resolved by the *en banc* court.

61. In June 2004, the *en banc* Federal Circuit held for the first time that Honeywell's act of rewriting the dependent claims in independent form, when combined with its cancellation of the antecedent independent claims, constituted a narrowing amendment and therefore gave rise to a presumptive surrender of equivalents by virtue of prosecution history estoppel. *Honeywell Int'l Inc. v. Hamilton Sundstrand Corp.*, 370 F.3d 1131, 1134 (Fed. Cir. 2004) (*en banc*), *cert. denied*, 125 S.Ct. 2928 (June 20, 2005) (No. 04-293).

62. While the Federal Circuit thus reversed this Court's prior legal conclusion regarding the effect of the rewriting of dependent claims into independent form, it did not purport to pass upon this Court's detailed factual findings regarding the course of prosecution of the Honeywell patents.

63. The *en banc* Federal Circuit also affirmed the jury's conclusion that Honeywell's patents were valid. *See* 370 F.3d at 1145-46.

64. The Federal Circuit therefore vacated the judgment of infringement and remanded the case to this Court for a determination of whether Honeywell can rebut the presumption of surrender of equivalents under the criteria set forth in *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722 (2002). *See* 370 F.3d at 1144.

65. Honeywell sought review of the *en banc* Federal Circuit decision from the Supreme Court, and that Court, signaling that it thought the case raised significant issues, directed the Solicitor General to submit a brief stating the views of the United States on this matter. *Honeywell Int'l Inc. v. Hamilton Sundstrand Corp.*, 543 U.S. 954 (2004).

66. While the Solicitor General advised the Supreme Court to deny Honeywell's petition for a writ of certiorari, he expressly stated that it was "clear" that "Honeywell is entitled to a meaningful opportunity to rebut the presumption against its invocation of the doctrine of equivalents.... The court of appeals' order remanding the case to the district court, which places this case in an interlocutory posture, will provide Honeywell with the opportunity that *Festo* envisions." Brief for United States as Amicus Curiae, *Honeywell Int'l Inc. v. Hamilton Sundstrand Corp.*, No. 04-293, at 20.

67. The Supreme Court denied certiorari, 125 S.Ct. 2928 (June 20, 2005), and this Court accordingly received this matter on remand.

## CONCLUSIONS OF LAW

### **The Doctrine Of Equivalents And Prosecution History Estoppel.**

68. The doctrine of "equivalents remain[s] a firmly entrenched part of the settled rights protected by the patent." *Festo*, 535 U.S. at 733.

69. Under the doctrine of equivalents, "a product or process that does not literally infringe upon the express terms of a patent claim may nonetheless be found to infringe if there is 'equivalence' between the elements of the accused product or process and the claimed elements of the patented invention." *Warner-Jenkinson Co., Inc. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 21 (1997).

70. Prosecution history estoppel "ensures that the doctrine of equivalents remains tied to its underlying purpose.... The doctrine of equivalents is premised on language's inability to capture the essence of innovation, but a prior application describing the precise element at issue undercuts that premise. In that instance the prosecution history has established that the inventor

turned his attention to the subject matter in question, knew the words for both the broader and narrower claim, and affirmatively chose the latter.” *Festo*, 535 U.S. at 734-35.

71. A narrowing amendment made during patent prosecution presumptively prevents the patentee from capturing equivalents of the narrowed limitation in a later infringement action. *Festo*, 535 U.S. at 740.

72. The presumption created by prosecution history estoppel is rebuttable if the patentee can prove that the specific equivalent at issue in a particular case was not surrendered by the narrowing amendment. *Festo*, 535 U.S. at 740.

73. The patentee bears “the burden of showing that the amendment does not surrender the particular equivalent in question.” There are three alternative ways by which a patentee can rebut the presumption of prosecution history estoppel: (1) by proving that “the rationale underlying the amendment [bears] no more than a tangential relation to the equivalent in question;” (2) by proving that the equivalent was “unforeseeable” at the time of the amendment; or (3) by proving that there is “‘some other reason’ suggesting that the patentee could not reasonably have been expected to have described the alleged equivalent.” *Festo*, 535 U.S. at 740-41.

74. The Supreme Court was clear in announcing this new regime that “[t]his presumption is not [] just the complete bar by another name.” *Festo*, 535 U.S. at 741.

75. The question of whether the presumption is rebutted is one of law to be determined by the court. *Festo*, 344 F.3d 1359, 1367 (Fed. Cir. 2003) (*en banc*).

76. For any factual determinations informing that question of law, the district court acts as the finder of fact. *Festo*, 344 F.3d at 1368 n.3.

77. Honeywell can rebut the presumption under any one of the three criteria announced by the Supreme Court in *Festo* by a preponderance of the evidence. *Cordis Corp. v. Medtronic Ave., Inc.*, 336 F. Supp. 2d 363, 367 (D. Del. 2004).

78. The overall focus in determining whether the presumption has been rebutted is whether the narrowing amendment “surrender[ed] the particular equivalent in question.” *Festo*, 535 U.S. at 740.

79. The “particular equivalent in question,” which the jury found infringed the Honeywell patents-in-suit, is the Sundstrand APS 3200 surge control system.

#### **Tangential Relation**

80. The “tangential relation” prong of the *Festo* rebuttal test concerns whether “the rationale underlying the amendment [ ] bear[s] no more than a tangential relation to the equivalent in question.” *Festo*, 535 U.S. at 740.

81. The focus of the tangential relation test is on the *reason* for the narrowing amendment. *Festo*, 344 F.3d at 1369-70.

82. The tangential relation test “asks whether the reason for the narrowing amendment was peripheral, or not directly relevant, to the alleged equivalent.” *Festo*, 344 F.3d at 1369.

83. The inquiry “focuses on the patentee’s objectively apparent reason for the narrowing amendment,” a reason which, “should be discernible from the prosecution history record.” *Festo*, 344 F.3d at 1369.

84. The underlying purpose of the amendment can often be determined based on the prior art that the amendment was made to avoid. *See, e.g. Biagro Western Sales, Inc. v. Grow More, Inc.*, 423 F.3d 1296, 1306 (Fed. Cir. 2005); *Engineered Prod. Co. v. Donaldson Co., Inc.*, 313 F.Supp. 2d 951, 973 (N.D. Iowa 2004).

85. Where a patentee demonstrates that the rationale underlying an amendment bears no more than a tangential relation to the equivalent, “the amendment cannot reasonably be viewed as surrendering [that] particular equivalent.” *Festo*, 535 U.S. at 740.

86. Because prosecution history estoppel is designed to prevent a patentee from regaining territory through an infringement action that he voluntarily surrendered during prosecution, an amendment made for a reason unrelated or only peripherally related to the equivalent does not trigger the doctrine. *Festo*, 535 U.S. at 734.

87. The relevant narrowing amendments took place on October 25, 1982 (as to the ‘893 patent) and September 1, 1983 (as to the ‘194 patent) when Honeywell responded to the Examiner’s office actions by canceling rejected independent application claims 16, 32 and 48 and rewriting dependent application claims 17, 35 and 51 in their place. *See Honeywell Int’l Inc.*, 370 F.3d at 1134; PTX 1003 at HSB401570, HSB401573; PTX 1004 at HSB401461, HSB401466, HSB401472.

88. In each case, the rejection that precipitated Honeywell's amendment was based on the Shell, Rateau, and Metot references, which the Examiner found disclosed surge control systems for a gas turbine engine with P and  $\Delta P$  sensors and proportional and integral controls as claimed by the independent application claims. PTX 1003 at HSB401566-567; PTX 1004 at HSB401456-457.

89. The Examiner indicated at the same time that application claims 17, 35, and 51, each of which disclosed additional elements, would be allowable if rewritten in independent form. PTX 1003 at HSB401567; PTX 1004 at HSB401458.

90. None of the three references that occasioned the amendment -- Shell, Rateau, and Metot -- bears any relation to the infringing Sundstrand system. In particular, none uses Sundstrand's "unique" DELPQP flow parameter and none made any use of inlet guide vane position as part of the surge control system. PTX 1069, 1015, 1006.

91. Further, in submitting the amendments, Honeywell made no reference to the Sundstrand equivalent, DELPQP, or inlet guide vane position. PTX 1003, 1004.

92. The rationale underlying the amendments -- to overcome a rejection based on art that contained a flow-related parameter subjected to proportional and integral control -- had nothing to do with the Sundstrand equivalent.

93. The Examiner never suggested that the amended claims were allowable because they claimed a particular use of inlet guide vane position, or even because they mentioned inlet guide vane position at all. Indeed, inlet guide vane position was never mentioned at any point in the prosecution history, either by the Examiner or by Honeywell. PTX 1003, 1004.

94. In *Insituform Tech., Inc. v. CAT Contr., Inc.*, 385 F.3d 1360, 1366 (Fed. Cir. 2004), as here, the Federal Circuit held that there had been a narrowing amendment based on the addition of a claim limitation when a broader independent claim was canceled in favor of a narrower, originally dependent one.

95. Claim 1 of Insituform's patent for an underground pipe repair method had originally not specified the number of cups that could be used to create a vacuum, but during prosecution the patentee replaced the broad, unlimited claim with a narrower claim that specified that a single cup would be used. *Insituform*, 385 F.3d at 1366. The process that was found to infringe under the doctrine of equivalents used multiple cups to create the vacuum. *Id.* at 1365-66.

96. The Federal Circuit held that Insituform had successfully rebutted the *Festo* presumption under the "tangential relation" test. *Insituform*, 385 F.3d at 1368. Specifically, the court concluded that the reason the amendment had been made was to distinguish the invention from prior art that involved the placement of a compressor, not the number of cups used to create the vacuum, and that there was "no indication in the prosecution history of any relationship between the narrowing amendment and a multiple cup process, which is the alleged equivalent in this case." *Id.* at 1370.

97. The prosecution history at issue in *Insituform* tracks that of Honeywell's patent prosecution precisely. The original independent claims all lacked the element at issue in the later equivalents dispute -- in the case of *Insituform*, cups; in the case of Honeywell, inlet guide vane position. See *Insituform*, 385 F.3d at 1368-70; PTX 1003 at HSB401556; PTX 1004 at HSB401434, HSB401439-40.



98. During prosecution, in both cases the independent claims were rejected, canceled and replaced by a narrower, dependent claims that contained a version of the element at issue -- in the case of *Insituform*, a single-cup process; for Honeywell, a particular use of inlet guide vanes. See *Insituform*, 385 F.3d at 1366; PTX 1003 at HSB401570, HSB401573; PTX 1004 at HSB401461, HSB401466, HSB401472.

99. In both cases the amendments were made to overcome prior art, and in each case the prior art being avoided did not include the element in the dependent claim that was effectively added to the broad independent claim. In the case of *Insituform* the prior art being avoided related to the location of the compressor while the added limitation concerned the number of cups. 385 F.3d at 1369-70. In Honeywell, the prior art being avoided concerned a flow-related parameter subjected to proportional and integral control while the added limitations included a reference to inlet guide vane position. PTX 1003 at HSB401566-567, HSB401573; PTX 1004 at HSB401456-57, HSB401466, HSB401472.

100. In each case the infringer used a variation of the element that had been added -- in *Insituform*, a multi-cup process; in Honeywell, inlet guide vane position to deal with a unique parameter. *Insituform*, 385 F.3d at 1365; PTX 1018 at ¶ 14.

101. Just as the Federal Circuit held in *Insituform* that there was no more than a tangential relationship between the amendment and the equivalent because “[t]here is no indication in the prosecution history of any relationship between the narrowing amendment and a multiple cup process,” 385 F.3d at 1370, Honeywell has successfully rebutted the presumption because there is no indication in the prosecution history here of any relationship between the narrowing amendments and the Sundstrand equivalent.

102. Whether prior art *not* considered during the patent examination contained any reference to inlet guide vane position is irrelevant to the “tangential relation” inquiry, which focuses exclusively on the art before the Examiner and applicant during prosecution. *Festo*, 344 F.3d at 1370.

103. In *Cordis Corp. v. Medtronic Ave., Inc.*, 336 F. Supp. 2d 363 (D. Del. 2004), the patent in suit, as in this case, was amended to overcome prior art. Chief Judge Robinson determined first that the prior art that had occasioned the amendment, as in this case, did not contain the accused equivalent. *Id.* at 369. The court next compared the prior art that had been in front of the Patent Office to the equivalent and found that they were “disparate devices with no logical connection to one another.” *Id.*

104. Properly focusing on whether the rationale underlying the amendments – rather than the amendments themselves – was more than peripherally related to the equivalent in question, Chief Judge Robinson concluded that “the reason the amendments were submitted was to distinguish a prior art device that is only tangentially related to either the inventive or the accused devices,” and she accordingly held that the *Festo* presumption had been rebutted. *Id.* at 370.

105. Similarly, because the prior art that the Honeywell amendments were made to avoid and the Sundstrand equivalent are in no way connected, the relevant amendments bore no more than a tangential relation to the equivalent.

106. By contrast, in the typical case where the “tangential relation” test has been held not satisfied, it is because the equivalent was in the prior art before the Examiner and therefore bore a direct relationship to the narrowing amendment.

107. In *Talbert Fuel Sys. Patents Co. v. Unocal Corp.*, 347 F.3d 1355 (Fed. Cir. 2003), the original application claimed a type of gasoline fuel with particular hydrocarbon mixtures but without any specification of the boiling point of the fuel. *Id.* at 1358. The Examiner rejected the claim based on a reference showing gasoline fuel with the claimed hydrocarbon mixtures and a boiling point between 390 and 420 degrees. *Id.*

108. In response, the applicant amended the claim to add a limitation that the claimed fuel had a boiling point between 121 and 345 degrees. *Talbert*, 347 F.3d at 1358. The amended claim issued.

109. The accused product had boiling points at 374 degrees and above. The Federal Circuit held that the patentee could not meet the tangential relationship test and assert that the accused product was equivalent because “the boiling range [was] at issue during prosecution and [was] the direct, not tangential, reason for the narrowing amendments to these claim limitations.” *Talbert*, 347 F.3d at 1360.

110. In this case, by contrast, the Examiner’s rejection had nothing to do with the use of inlet guide vane position, and none of the prior art considered during prosecution related to inlet guide vane position. Here it is not the case, as it was in *Talbert Fuel*, that the prior art “embraced the alleged equivalent,” or that the use of inlet guide vane position was “at issue during prosecution and was the direct reason for the narrowing amendment.” PTX 1021 No. 5; PTX 1003 at HSB401456-457; PTX 1004 at HSB401566-567.

111. The three asserted claims were not allowed by the Examiner merely because they added use of inlet guide vane position. Rather, each of the claims was amended to add use of inlet guide vane position as well as other features.

112. The amendment to claim 8 of the '893 patent, for example, added four elements: 1) a flow-related parameter whose value is "substantially independent of the temperature of the compressed air;" 2) a comparator means having an "adjustable control set point representing said desired value of said parameter;" and 3) a "reset signal for varying said set point as a function of the position of said inlet guide vanes" 4) "in accordance with a predetermined reset schedule." PTX 1004 at HSB401466-67.

113. The amendments to claim 19 of the '893 patent and claim 4 of the '194 patent added more elements than just the use of inlet guide vane position. PTX 1004 at HSB401472; PTX 1003 at HSB401573.

114. The Examiner never indicated that he attached any particular significance to the use of inlet guide vane position, and none of the claims was allowed based solely on the addition of the inlet guide vane position. Rather, the reason for the amendments that is "objectively apparent" from the prosecution (*Festo*, 344 F.3d at 1369) was to add various additional elements to the surge control system beyond merely the flow-related parameter subjected to proportional and integral control, which the Examiner had held unpatentable standing alone.

115. Nothing in the prosecution history record indicates any relationship between the amendments at issue and the APS 3200 surge control system. Honeywell has therefore established that there is no more than a tangential relation between the amendments and the equivalent. Honeywell has successfully rebutted the *Festo* presumption on this basis.

### **Unforeseeability**

116. The unforeseeability "criterion presents an objective inquiry, asking whether the alleged equivalent would have been unforeseeable to one of ordinary skill in the art at the time of

the amendment. Usually, if the alleged equivalent represents later-developed technology (e.g., transistors in relation to vacuum tubes, or Velcro(R) in relation to fasteners) or technology that was not known in the relevant art, then it would not have been foreseeable. In contrast, old technology, while not always foreseeable, would more likely have been foreseeable.” *Festo*, 344 F.3d at 1369 (citation omitted).

117. As a matter of undisputed chronology, Sundstrand did not start working on the infringing system until 1989, years after the Honeywell amendments at issue, and did not settle upon the final, infringing configuration until 1995, more than a decade after the amendments. February 2001 Trial Transcript at 1254-55, 1257; PTX 1018 at ¶ 14.

118. As Sundstrand’s long development period itself suggests, the APS 3200 surge control system represented a departure from prior surge control systems. The flow-related parameter used in the APS 3200, which Sundstrand termed DELPQP, was novel and had never before been used. November 10, 2000 Expert Report of Francis Shinskey at 9; February 2001 Trial Transcript at 1335, 1356; Trial Testimony of G. Muller.

119. One reason that DELPQP is so unusual is that the two pressure sensors that produce the measurement are located in the compressor outlet duct and in the diffuser of the APS 3200, which are counter-intuitive locations from which to measure flow through the compressor. PTX 1018 at ¶ 3; Trial Testimony of G. Muller.

120. It was Sundstrand’s use of the “unique” DELPQP flow-related parameter that gave rise to its particular use of inlet guide vane position that the jury found equivalent to the Honeywell patents. Sundstrand’s technical expert at the original proceedings, Mr. Shinskey, admitted at trial that the APS 3200 used inlet guide vane position to determine whether DELPQP

was in “high flow” or “low flow” mode, and that the “only purpose” of the inlet guide vane position in the APS 3200 surge control system “is to protect against this possibility and it’s caused based on the unique characteristic of the DELPQP measurement as a function of flow.” Ex. 3 at 1580, 1383; Trial Testimony of G. Muller.

121. There is no evidence of any surge control system in existence in 1982-83 that measured inlet guide vane position in order to compensate for a flow-related parameter that could indicate multiple levels of flow for a given value of the parameter. Accordingly, the Sundstrand equivalent represents later-developed technology, which was unforeseeable in 1982-83, and therefore Honeywell cannot be held to have relinquished this unknown subject matter when it amended its patent claims. *Festo*, 535 U.S. at 740.

122. Sundstrand, on remand, tries to ignore the evidence that it introduced at trial and seeks to completely change its story and with it, its technical expert. During these remand proceedings, Sundstrand has not submitted an expert disclosure from its prior trial expert, Mr. Shinskey, and has instead replaced him with a new would-be expert, David Japikse.

123. Japikse stated in his expert report, submitted during remand discovery, that “[t]here was nothing novel about DELPQP in 1982.” January 12, 2006 Expert Report of David Japikse at 20.

124. Mr. Japikse also claimed in his expert report that Hamilton Standard developed an engine, the L1011, in the 1970s with the same surge control technology as the APS 3200 -- which Sundstrand previously proved was newly developed in the 1990’s and took nearly four years to make workable. January 12, 2006 Expert Report of David Japikse at 18-19, 22, 26-33; PTX 1018 at ¶¶ 13-14; February 2001 Trial Transcript at 1254-55, 1257.

125. Sundstrand never once mentioned the L1011 during the February 2001 trial.

126. At trial, Sundstrand presented Mr. Shinskey to the Court and the jury as a member of the “Control Hall of Fame.” February 2001 Trial Transcript at 1326. During closing arguments in February of 2001, Sundstrand’s counsel argued to this Court and to the jury that “Mr. Shinskey is a fellow with decades of experience and knowledge about controlling compressors. And as you know, has written books and articles, and has been invited to 50 different nations around the world to give lectures about controlling compressors. He’s the real McCoy. He’s a genuine expert. He knows what he’s talking about.” *Id.* at 2609.

127. Sundstrand’s assertion, in an effort to contradict its prior proof, that, in fact, Mr. Shinskey did not know what he was talking about and was ignorant of huge swaths of relevant prior art, lacks credibility.

128. The patent owner in *BEI Tech., Inc. v. Matsushita Elec. Indus. Co.*, 268 F.Supp.2d 782 (E.D. Mich. 2003), established that the equivalent was unforeseeable at the time of the amendment by relying on four pieces of evidence: 1) the fact that none of the prior art references raised during prosecution had suggested or disclosed the equivalent; 2) the fact that none of the inventors were personally aware of the equivalent; 3) the fact that the infringer had not developed the equivalent until several years after prosecution of the patent; and 4) the fact that an article dated several years after prosecution of the patent had ended stated that the equivalent was a new process. *Id.* at 801-02.

129. Honeywell can point to the same categories of evidence as the patent holder in *BEI*. It is undisputed that none of the prior art references raised during prosecution had suggested or disclosed the equivalent. PTX 1021 at Response No. 5. Further, neither the

inventors nor anyone else could have been aware of the equivalent at the time of the amendment because Sundstrand did not develop the equivalent until years after prosecution of the patents. PTX 1018 at ¶ 14. Finally, the evidence (including the testimony from Mr. Shinskey) establishes that the Sundstrand equivalent was a “unique” departure from the surge control systems “not described elsewhere in patents or prior art.” November 10, 2000 Expert Report of Francis Shinskey at 9; *see also* February 2001 Trial Transcript at 1335, 1356, 1383.

130. This evidence, taken together, as in *BEI*, establishes that the Sundstrand equivalent was unforeseeable at the time of the amendments.

131. By contrast, the cases that have rejected patent owners’ rebuttal arguments on this prong and found equivalents to have been foreseeable have typically done so because the equivalent was disclosed within the patent file itself. *See Glaxo Wellcome, Inc. v. Impax Labs, Inc.*, 356 F.3d 1348, 1355 (Fed. Cir. 2004) (patent owner submitted references to the Patent Office disclosing the equivalent); *Ranbaxy Pharm., Inc. v. Apotex, Inc.*, 350 F.3d 1235, 1241 (Fed. Cir. 2003) (equivalent discussed in text of patent); *Sliptrack Sys., Inc. v. Steeler Metals, Inc.*, No. C-04-0462 PVT, 2004 WL 2323935, \*9 (N.D. Cal. Oct. 12, 2004) (“[t]he very equivalent in question was disclosed in the specification as a ‘preferred method of assembly.’”) (Ex. 23); *Competitive Tech., Inc. v. Fujitsu Ltd.*, 333 F.Supp. 2d 858, 887 (N.D. Cal. 2004) (“it is clear from *the patent itself* that the inventors were not only aware that the timing of switching was a significant issue, but also that in the prior art” the equivalent was disclosed) (emphasis added); *see also Research Plastics, Inc. v. Federal Packaging Corp.*, 421 F.3d 1290, 1299 (Fed. Cir. 2005) (equivalent was disclosed in art that was subject of prosecution); *Pioneer Magnetics, Inc. v. Micro Linear Corp.*, 330 F.3d 1352, 1357 (Fed. Cir. 2003) (same); *Bio-Rad Labs, Inc. v. Applera Corp.*, No. C 02-05946 JW, 2005 WL 2008020, at \*6 (N.D. Cal. Aug. 12, 2005) (same)



(Ex. 24) ; *NPC, Inc. v. International Precast Supply, Inc.*, 337 F.Supp. 2d 378, 393 (D.N.H. 2004) (same); *Talbert*, 347 F.3d at 1359 (same).

132. It is undisputed that in this case the equivalent can not be found anywhere in the prosecution history. PTX 1021 at No. 5; PTX 1003, 1004.

133. The Sundstrand equivalent uses a unique flow parameter that gave rise to a unique use of inlet guide vane position, neither of which was known in the art at the time of the amendments. Where, as here, the equivalent at issue is “qualitatively different than what went before,” it was “not foreseeable at the relevant time” and the patent holder “is not estopped from arguing infringement by the doctrine of equivalents.” *BEI Tech., Inc.*, 268 F.Supp.2d at 802.

#### **“Other Reasons”**

134. In announcing the bases on which a patent holder could rebut the presumption of estoppel, the Supreme Court fashioned a broad third way that a patent may rebut the *Festo* presumption. “[T]here may be some other reason suggesting that the patentee could not reasonably be expected to have described the insubstantial substitute in question.” *Festo*, 535 U.S. at 740-41. See, e.g., *Amgen*, 287 F.Supp.2d at 158-59 (finding rebuttal of *Festo* presumption based on “other reasons”); *Liquid Dynamics Corp. v. Vaughan Co., Inc.*, No. 01 C 6934, 2004 WL 2260626, at \*14 (N.D. Ill. Oct. 1, 2004) (same).

135. Extrinsic evidence is admissible to evaluate rebuttal under the third criteria, particularly regarding the reasonable expectations of the patentee. *Amgen*, 287 F.Supp. 2d at 156.

136. A reasonable patent practitioner in 1982-83 would not have believed that he had surrendered coverage of equivalents to inlet guide vane position use during prosecution of the '893 and '194 patents. Trial Testimony of M. Garner.

137. Based on standard prosecution practices and Patent Office procedures in 1982-83, a reasonable patent prosecutor would not have believed it necessary to submit additional claims seeking coverage of other inlet guide vane variations. A reasonable patent attorney at the time would not have believed that he had engaged in a narrowing amendment by rewriting Honeywell's original dependent application claims in independent form. Trial Testimony of M. Garner.

138. Supporting proof of this resides in this Court's decision, twenty years later, that no estoppel resulted from this fact pattern (*Honeywell International Inc. v. Hamilton Sundstrand Corp.*, No. Civ. A. 99-309 GMS, 2001 WL 66348, at \*4-\*6 (D. Del. Jan. 8, 2001)), an issue on which it took the *en banc* Federal Circuit to review and announce a new rule of law. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 344 F.3d 1359 (Fed. Cir. 2003) (*en banc*).

139. There is evidence that a reasonable person would have believed that the APS 3200 surge control system (had they known about that later-developed system at the time of the patent prosecution) was literally covered by claim 4 of the '194 patent. In ruling on Sundstrand's motion for summary judgment, the Court held that Honeywell had "provided evidence demonstrating that there is a genuine factual dispute as to whether every element of Claim 4 of the '194 patent is embodied in Sundstrand's APS 3200." *Honeywell International Inc. v. Hamilton Sundstrand Corp.*, No. Civ. A. 99-309 GMS, 2001 WL 66348, at \*3 (D. Del. Jan. 8, 2001).

140. At trial, Honeywell presented substantial, competent evidence that the APS 3200 literally infringed claim 4 of the '194 patent, including its limitation (d) relating to inlet guide vane position, including the detailed testimony its own technical expert, Gerard Muller. February 2001 Trial Testimony at 636-696.

141. The evidence of literal infringement presented by Honeywell at trial also included the testimony of Sundstrand's technical expert, Mr. Shinskey, who admitted on cross-examination that in the APS 3200 surge control system the relationship between the magnitudes of the integral and proportional control signals and the magnitudes of the parameter variations is adjusted as a function of the inlet guide vanes. February 2001 Trial Transcript at 1579-80.

142. Mr. Shinskey conceded that it is the position of the inlet guide vanes in the APS 3200 that adjusts the relationship between the magnitudes of the control signals and the magnitudes of the parameter variation as reflected by whether the APS 3200 is in high-flow or low-flow mode. February 2001 Trial Transcript at 1580.

143. The court in *Amgen, Inc. v. Hoechst Marion Roussel, Inc.*, 287 F. Supp. 2d 126 (D. Mass. 2003), held that the patent owner had successfully rebutted the presumption under the third criteria based on expert testimony "suggesting that the drafter of the amendment in question -- and those skilled in the art -- interpreted the amendment to cover" the equivalent. *Id.* at 157.

144. The court in *Amgen* noted that the critical question is not whether the patent holder "*could have* easily drafted an amendment that literally encompassed the equivalent" -- since it clearly could have -- but rather whether the patent holder "has shown by a fair preponderance of the evidence that those skilled in the art (and the Patent Office) interpreted the amendment to encompass the equivalent." 287 F. Supp.2d at 158 (emphasis in original).

145. From a patent prosecution attorney's prospective, the Honeywell claims at issue would have appeared broad enough to cover the Sundstrand product, if hypothetically, and contrary to fact, it had existed and had been known at the time. Trial Testimony of M. Garner.

146. In laying out the third, "other reason," category, the Supreme Court specifically included consideration of the reasonable expectations of the patentee in the analysis of whether this criterion had been satisfied. *Festo*, 535 U.S. at 740-41; *see also Amgen*, 287 F.Supp. 2d at 156.

147. "Thus, the Court's analysis at this stage -- as opposed to that during claim construction -- includes a reasonableness inquiry that involves questions of equity." *Amgen*, 287 F.Supp. 2d at 156.

148. Based on the evidence on contemporaneous patent practices and reasonable expectations at the time, Honeywell could not reasonably be expected to have described literally in its patent application the equivalent used by Sundstrand.

### **Conclusion**

149. Honeywell has rebutted the *Festo* presumption on each of the three bases specified by that case. Accordingly, the jury was properly charged on the doctrine of equivalents, and the jury's February 16, 2001 verdict of infringement is hereby reinstated.

# EXHIBIT 19

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

HONEYWELL INTERNATIONAL INC.  
and HONEYWELL INTELLECTUAL  
PROPERTIES INC.

Plaintiffs,

v.

HAMILTON SUNDSTRAND CORP.,

Defendant.

**C.A. No. 99-309-GMS**

**FINAL PRETRIAL ORDER  
EXHIBIT 19**

**STATEMENT OF SETTLEMENT DISCUSSIONS**

The parties had a one-day mediation with Magistrate Judge Mary Pat Thyng in 2000 during pre-trial proceedings in this case. The case did not settle.

In March 2005, the parties took part in another mediation conference with Magistrate Judge Thyng. No settlement was reached during the mediation.

In January 2006, the parties took part once again in a mediation conference with Magistrate Judge Thyng. No settlement was reached during the mediation.<sup>1</sup> Further settlement discussions between the parties that were held after the January 2006 mediation have not been successful to date.

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<sup>1</sup> Honeywell and Sundstrand recently reached an agreement to settle two other patent cases relating to similar technology, one of which was pending before this Court. That settlement put an end to proceedings in *Hamilton Sundstrand Corp. v. Honeywell International Inc.*, CIV 01 0901 PHX SMM (D. Ariz.), and *Honeywell International Inc. and Honeywell Intellectual Properties Inc. v. Hamilton Sundstrand Corp.*, C.A. No. 03-1153-GMS (D. Del.). This case was specifically exempted from the parties' settlement.